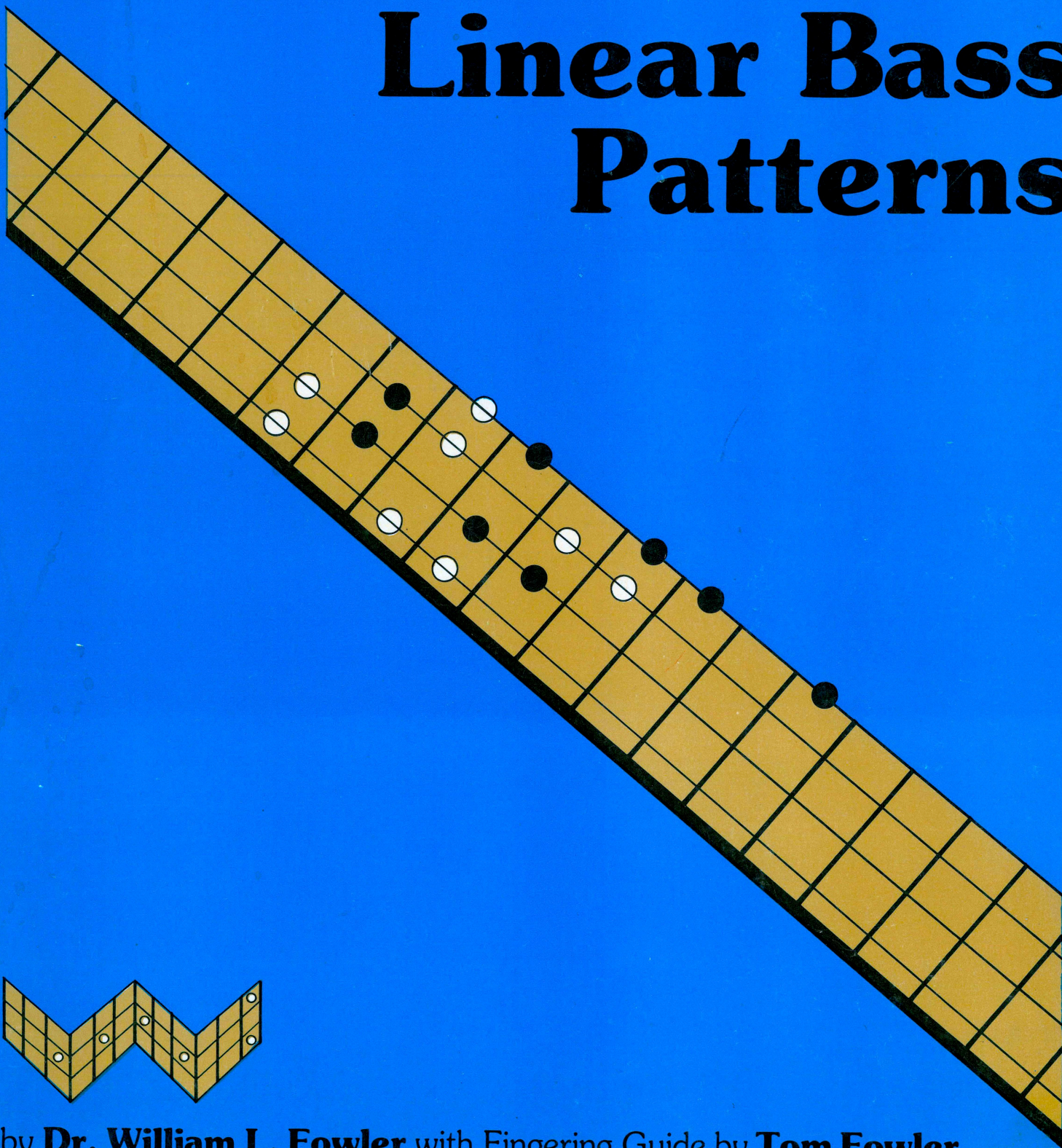


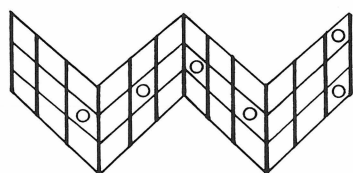
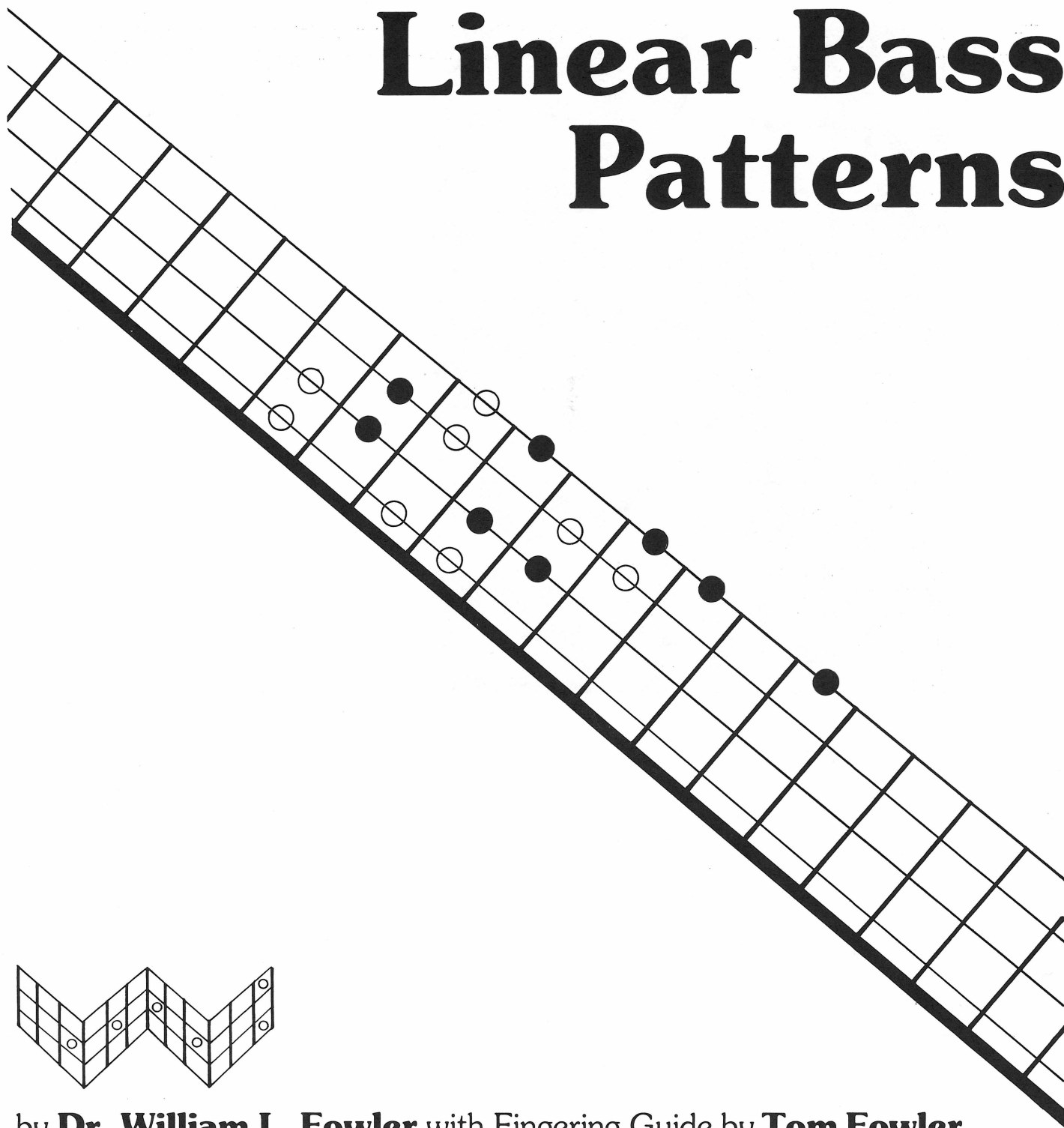
Take Another Look at  
**Linear Bass  
Patterns**



by **Dr. William L. Fowler** with Fingering Guide by **Tom Fowler**



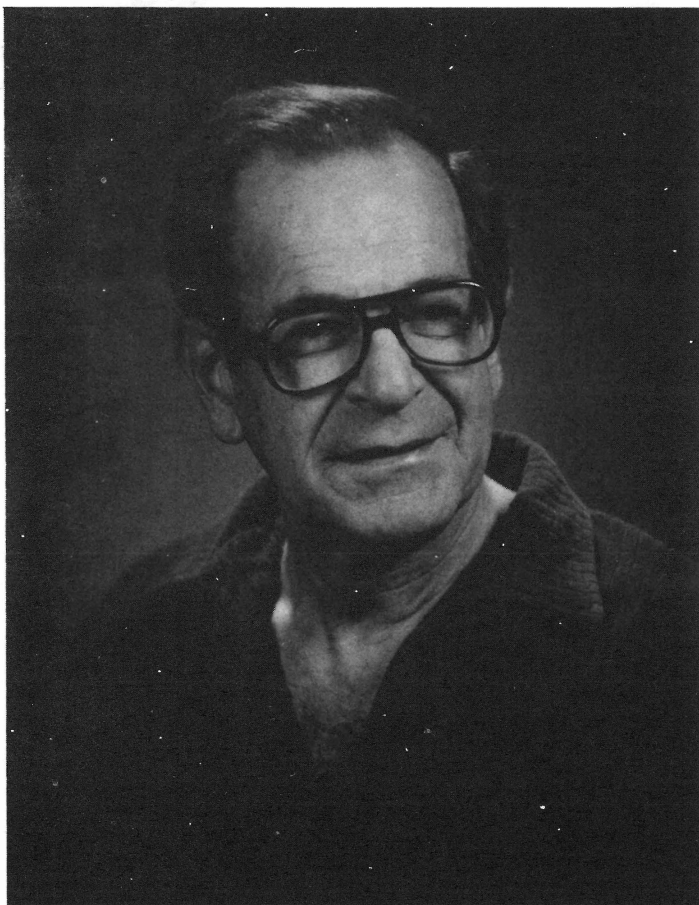
# Take Another Look at **Linear Bass Patterns**



by **Dr. William L. Fowler** with Fingering Guide by **Tom Fowler**



To my bass-playing sons, Tom and Ed.



©1983 by William L. Fowler, Lakewood, Colorado. All rights reserved.

Printed in U.S.A. Address all correspondence to: William L. Fowler, 808 South Alkire St.,  
Lakewood, Colorado 80228.

Library of Congress Card Catalogue Number 82-090956  
ISBN 0-943894-01-8



# TABLE OF CONTENTS

FOREWORD .....	i
DEFINITIONS AND ABBREVIATIONS .....	ii
FINGERBOARD FACTS .....	1
INTERVALS .....	5
FINGERING GUIDE .....	10
TETRACHORDS .....	18
TRADITIONAL SCALES AND MODES .....	24
NON-TRADITIONAL SEVEN-NOTE SCALES .....	48
PENTATONIC SCALES .....	53
SIX-NOTE SCALES .....	59
EIGHT-NOTE SCALES .....	62







## FOREWORD

This book focuses on linear materials for bass—how to see, how to play, and consequently how to hear all kinds of intervals, all kinds of tetrachords, and all kinds of scales.

It illustrates its linear patterns on model bass fingerboards, a method which trains the eye to see those patterns as complete fingerboard units rather than as notes written on a music staff and which allows non-readers as well as readers to use the book.

Tom Fowler's FINGERING GUIDE, a special section on position playing, finger extending, expanded fingering, and position shifting, explains and illustrates the most efficient ways to manage the left hand. By applying the various fingering methods demonstrated in the guide, a bassist can choose among several different fingerings for each scale pattern.

The FINGERBOARD FACTS and INTERVALS sections which precede the FINGERING GUIDE prepare the reader for its full understanding. And the guide in turn prepares the reader to utilize fully the scale patterns which follow.

In some instances, illustrated patterns throughout the book will seem to be impractical for ordinary playing. These very patterns, though, will prove to be the most practical for improving flexibility, for building technique, and for achieving accuracy.

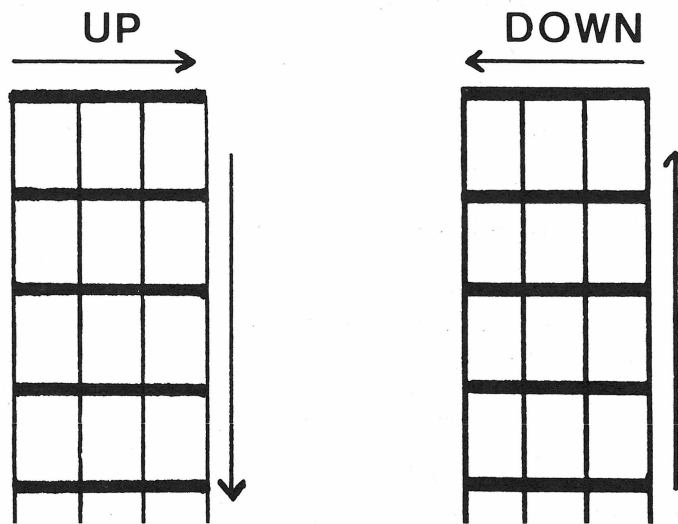
This book is a companion for this author's *FINGERBOARD FORMS FOR BASS*, which examines chords and arpeggios (Mel Bay Publications).





## DEFINITIONS

**UP AND DOWN:** On the bass fingerboard, these terms refer to pitch, rather than to distance from the ground. Their customary meanings therefore reverse. The highest bass string is closest to the ground; the lowest bass string is farthest from the ground. The highest frets are closest to the body; the lowest frets are farthest from the body:



**POSITION:** A short segment of the fingerboard identified by the number of the fret which the first finger of the left hand occupies.

**SHIFT:** A change in position up or down the neck.

**MUSICAL ALPHABET:** A B C D E F G A B C and so on as pitch ascends.

**TETRACHORD:** Four consecutive letters along the musical alphabet.

**SCALE:** A series of notes along the musical alphabet beginning and ending on the same letter. Five-note scales omit two letters; six-note scales omit one letter; seven-note scales include all seven letters; eight-note scales add one letter altered by an accidental; and so on.

**TONIC:** The note upon which a scale is built.

**SCALE DEGREE:** Any note in a scale. Roman numerals indicate how many notes above the Tonic each degree lies:

Tonic	Supertonic	Mediant	Subdominant	
I	II	III	IV	
	Dominant	Submediant	Leading tone	Tonic
	V	VI	VII	VIII
				(I)

**INTERVAL:** The musical distance from one note to another.



**HALF-STEP:** An interval whose notes lie a fret apart on the same string.

**WHOLE STEP:** An interval whose notes lie two frets apart on the same string.

**TRITONE:** An interval whose notes lie three consecutive whole steps apart.

**UNISON:** One note thought of as two.

**OCTAVE:** The first repetition of a letter along the musical alphabet.

**FIFTEENTH:** A double octave.

**CONJUNCT:** The top note of a scale or tetrachord coinciding (unison) with the bottom note of another.

**ACCIDENTAL:** A sign which changes the pitch of a letter by one fret.

**SHARP:** An accidental which raises pitch by one fret (#).

**FLAT:** An accidental which lowers pitch by one fret (b).

**NATURAL:** An accidental which cancels a previous sharp or flat (♮).

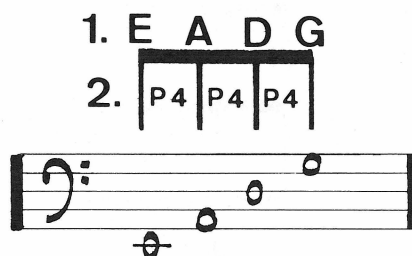
## ABBREVIATIONS

MAJOR:	M
MINOR:	mi
PERFECT:	P
AUGMENTED:	aug or a
DIMINISHED:	dim or d
OCTAVE:	8ve
HARMONIC:	Harm.
MELODIC:	Mel.
HUNGARIAN:	Hung.

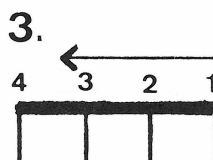
# FINGERBOARD FACTS

## PRIMARY FEATURES OF THE BASS FINGERBOARD

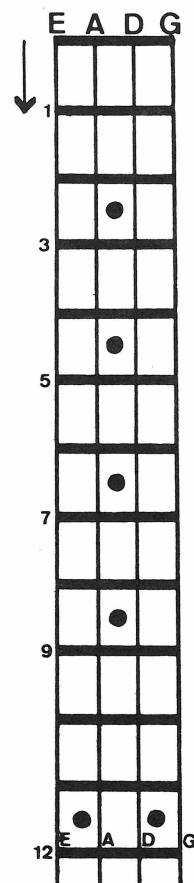
- 1.) The open strings tune to E, A, D, and G.
- 2.) The intervals between adjacent open strings are all the same: each is a Perfect fourth:



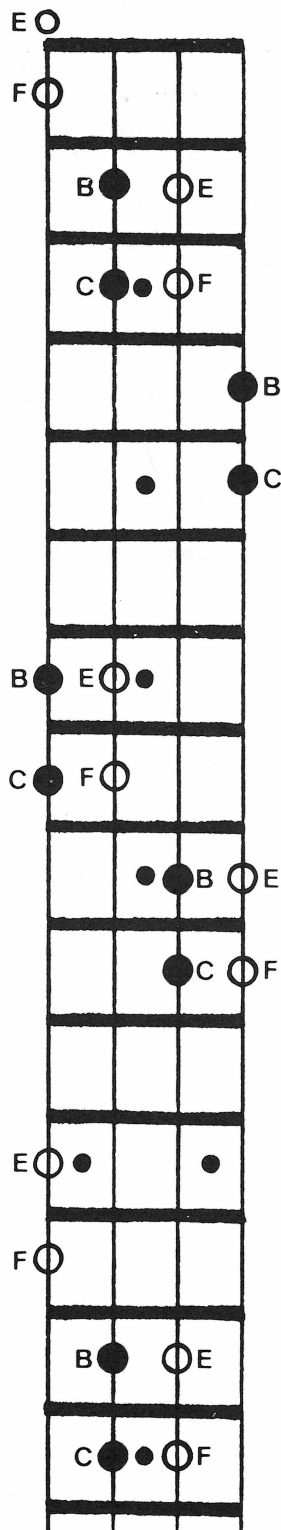
- 3.) String numbers proceed to the left across the fingerboard:



- 4.) Fret numbers proceed from the nut to the body. Single dots mark frets three, five, seven, and nine. A double dot marks fret twelve, an octave above the open strings:

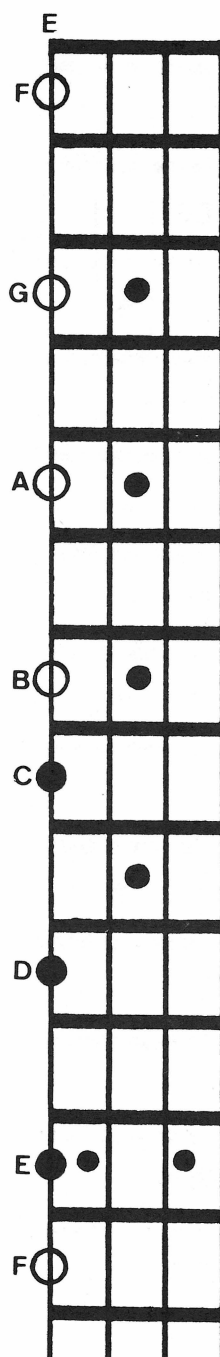


Along each string, E lies next to F, and B lies next to C, a musical distance termed either *minor second* or *half-step*. These pairs of half-steps often form compact block patterns on adjacent strings:

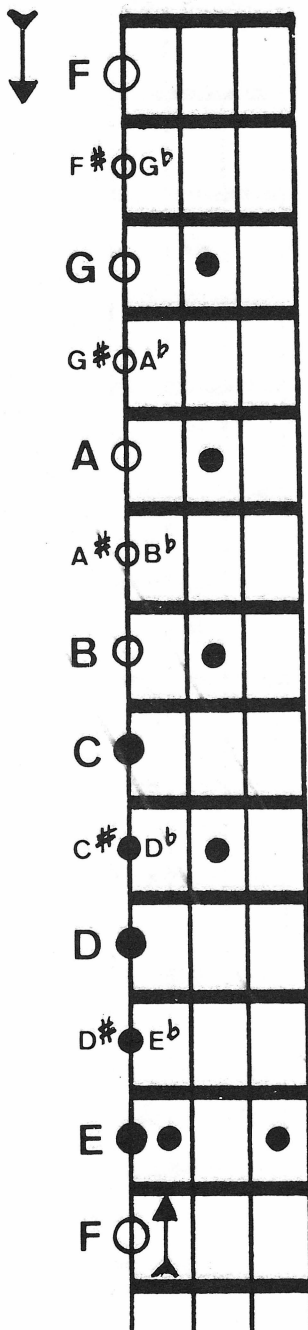




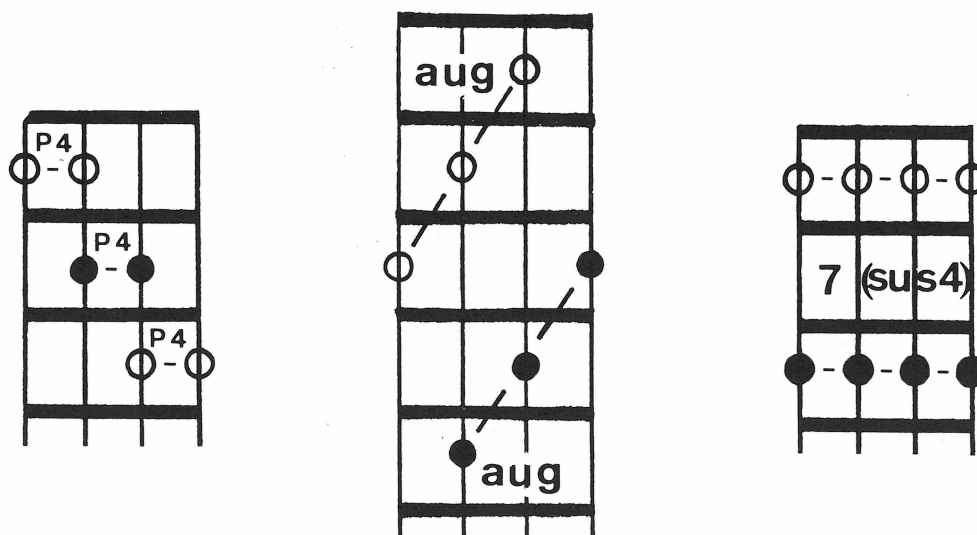
The remaining adjacent letters in the natural musical alphabet—F to G, G to A, A to B, C to D, and D to E—lie two frets apart along the same string, a musical distance termed *Major second* or *whole step*:



As the above example demonstrates, consecutive whole steps form alternating three-note and four-note groups, joined together by either the B-C or the E-F half-step. The empty frets in these whole-step patterns provide places for chromatically altered notes, either a sharpened lower letter or a flatted upper letter. A chromatic scale results from filling all the frets by sharps ascending and by flats descending. Here are both the ascending and the descending chromatic scale versions from F to F on the fourth string:



On the fingerboard, patterns which look alike also sound alike: adjacent strings on the same fret always sound a Perfect fourth; a slanting line down three consecutive frets always sounds an augmented triad; and a bar straight across any fret always sounds a suspended-fourth seventh chord:

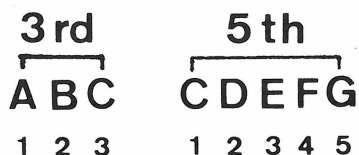


The same mobility applies to melodic patterns as well: Any melodic pattern retains its tonal characteristics wherever it might be relocated, a fingerboard feature which allows this book to minimize the number of its examples. Accordingly, each illustration is to be viewed as a movable model for application to all possible positions.

*To transpose keys, relocate patterns*

## INTERVALS

Any two notes make an interval. Except for the unison, which is a repetition of exactly the same note, each interval requires both a number and a word to pinpoint its exact size. The number indicates how many letters along the musical alphabet the interval spans:



When the number gets up to eight, it has reached the same letter it started with—it has reached an octave:



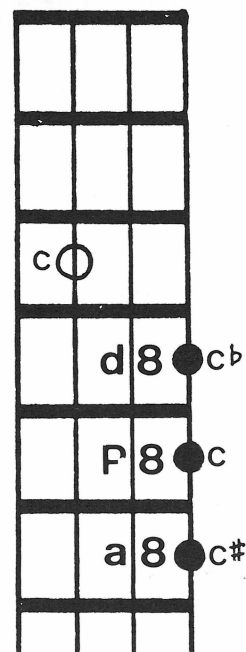
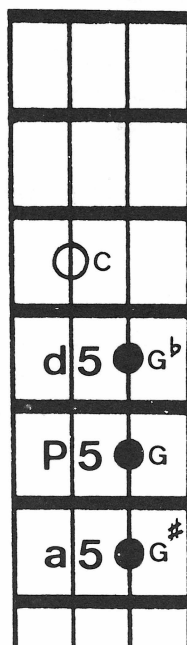
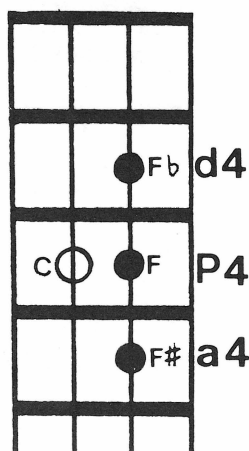


As intervals extend beyond an octave, their numbers continue past eight. The first letter beyond an octave becomes a ninth, the next a tenth, and so on up to a fifteenth, which is a double octave. These compound intervals match letters with their corresponding simple intervals. A ninth matches a second, a tenth matches a third, and so on:

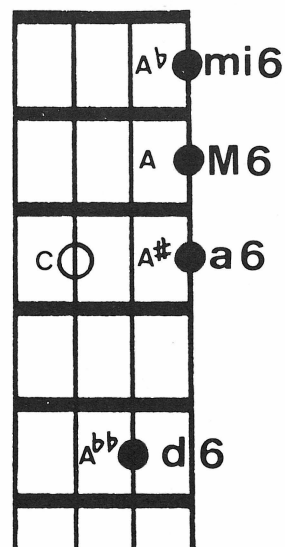
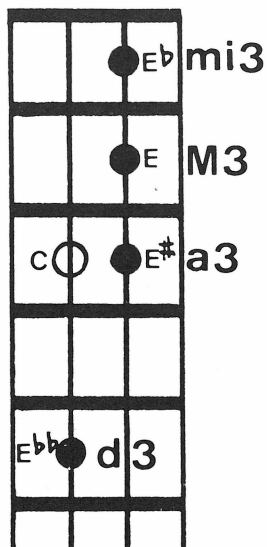
A B C  
1 2 3

A B C  
8 9 10

A number by itself, though, indicates only how many letters an interval spans. A fifth, for example, might be C up to G, C up to G<sup>#</sup>, or C up to G<sup>b</sup>. To determine which of these exact sizes the number represents requires additional description, which the word supplies. *Augmented*, *Perfect*, and *diminished* apply to fourths, fifths, and octaves:

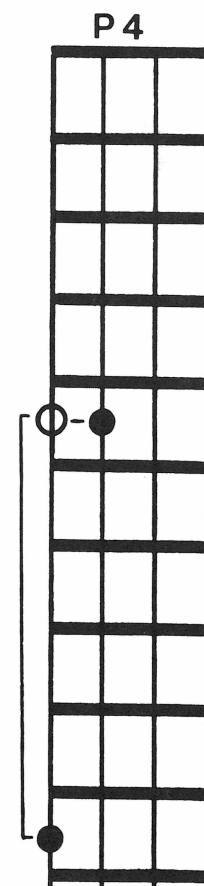
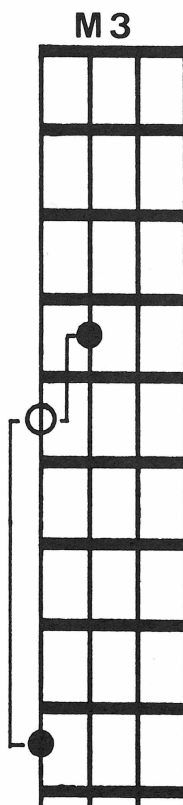
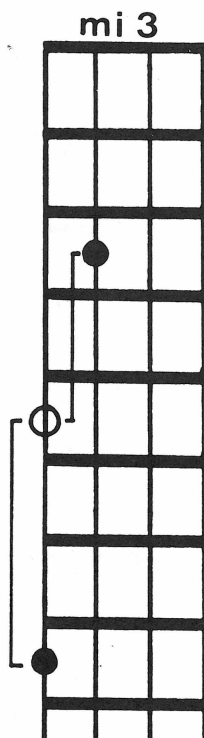
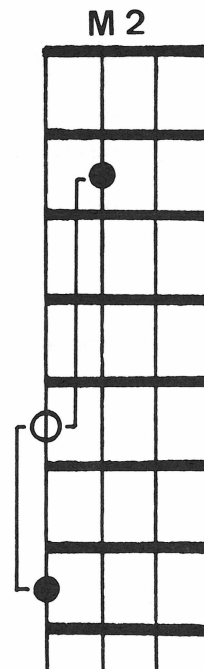
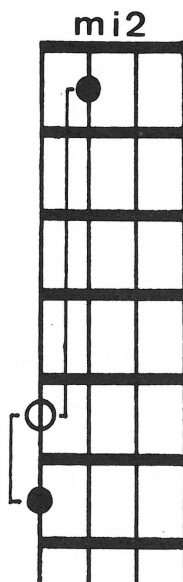
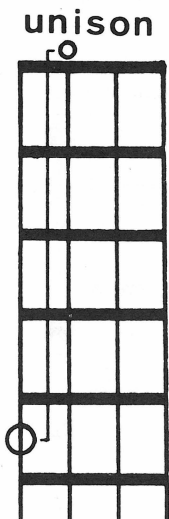


*Augmented*, *Major*, *minor*, and *diminished* apply to seconds, thirds, sixths, and sevenths:

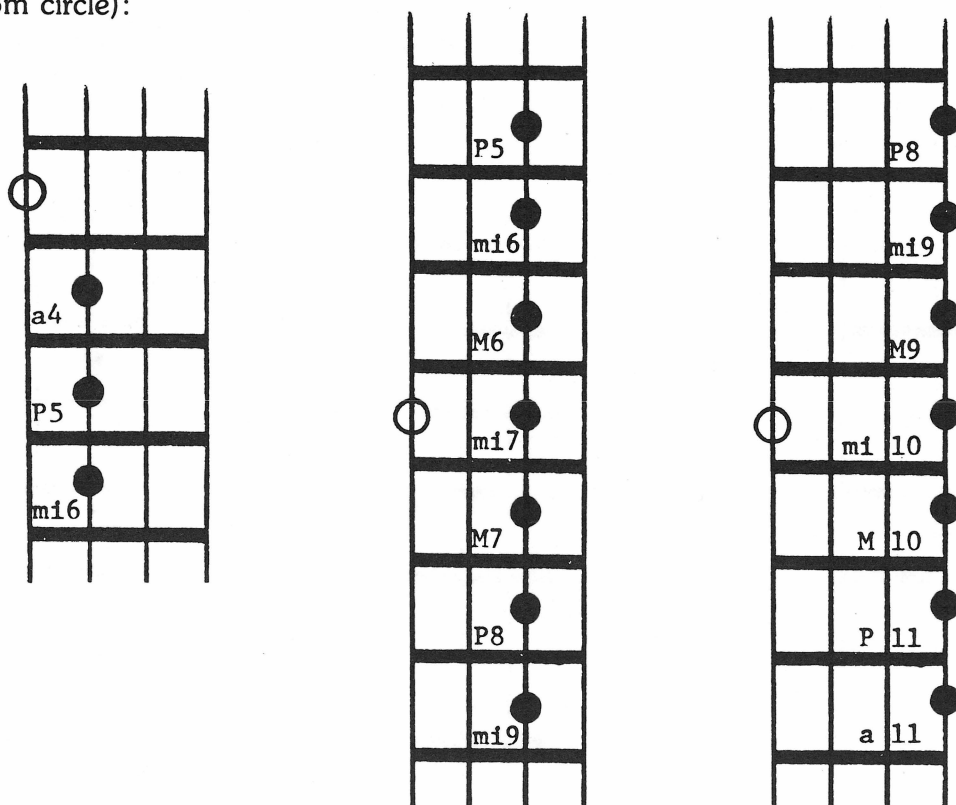


The augmented version of an interval is its largest form, and the diminished version is its smallest form.

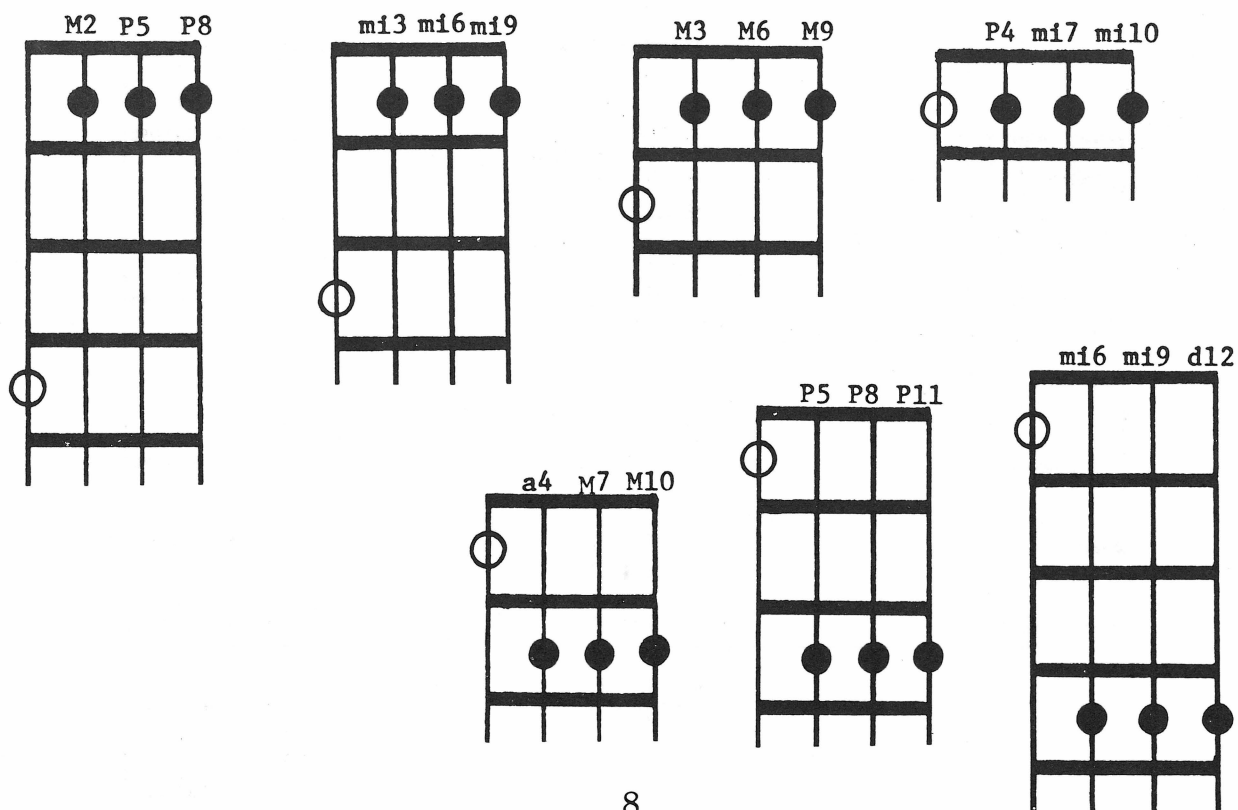
Most intervals are easiest to see and play on two different strings. But the smaller ones—unisons to Perfect fourths—are equally practical on one string or on adjacent strings. These intervals appear in scales in various ways. Seconds, thirds, and fourths occur between notes spaced one, two, or three degrees apart, such as I up to II, II up to IV, or II up to VI. The following illustrations match single string intervals up to a Perfect fourth with their corresponding adjacent string versions. In each matched pair, the number of frets up a single string subtracted from five equals the number of frets down the next string (five up = none down, four up = one down, three up = two down, and so on):



The next illustration shows how intervals larger than a Perfect fourth usually appear within scale patterns. These intervals occur between scale notes four or more degrees apart, such as I up to V or II up to VII (A solid dot indicates the relative position of each interval above the bottom circle):



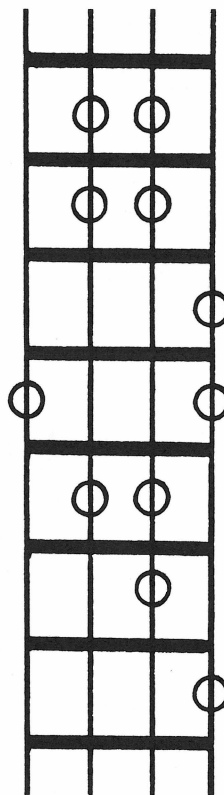
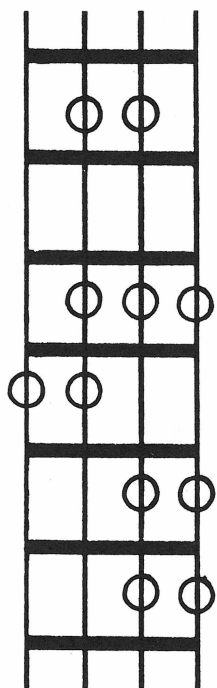
Recognition of all fingerboard intervals with a four-fret span will be reinforced by study of the following condensed chart. In it, the interval numbers increase by three as the upper notes move across the same fret, while quality names either remain the same or change from augmented to Major, Major to Perfect, Perfect to minor, or minor to diminished:





# EXERCISE:

In the following extended Major and Hungarian minor scales, play and name the intervals between each note and every other note within four frets above or below it. Start with the intervals above the first note, then continue with those above the second note, and then with those above the third note, and so on. When an interval has two possible names, such as mi 3 or aug 2, aug 4 or dim 5, and mi 6 or aug 5, include both versions:



Diminished, Perfect, and augmented

4, 5, 8, 11

Minor, Major, and augmented

2, 3, 6, 7, 9, 10

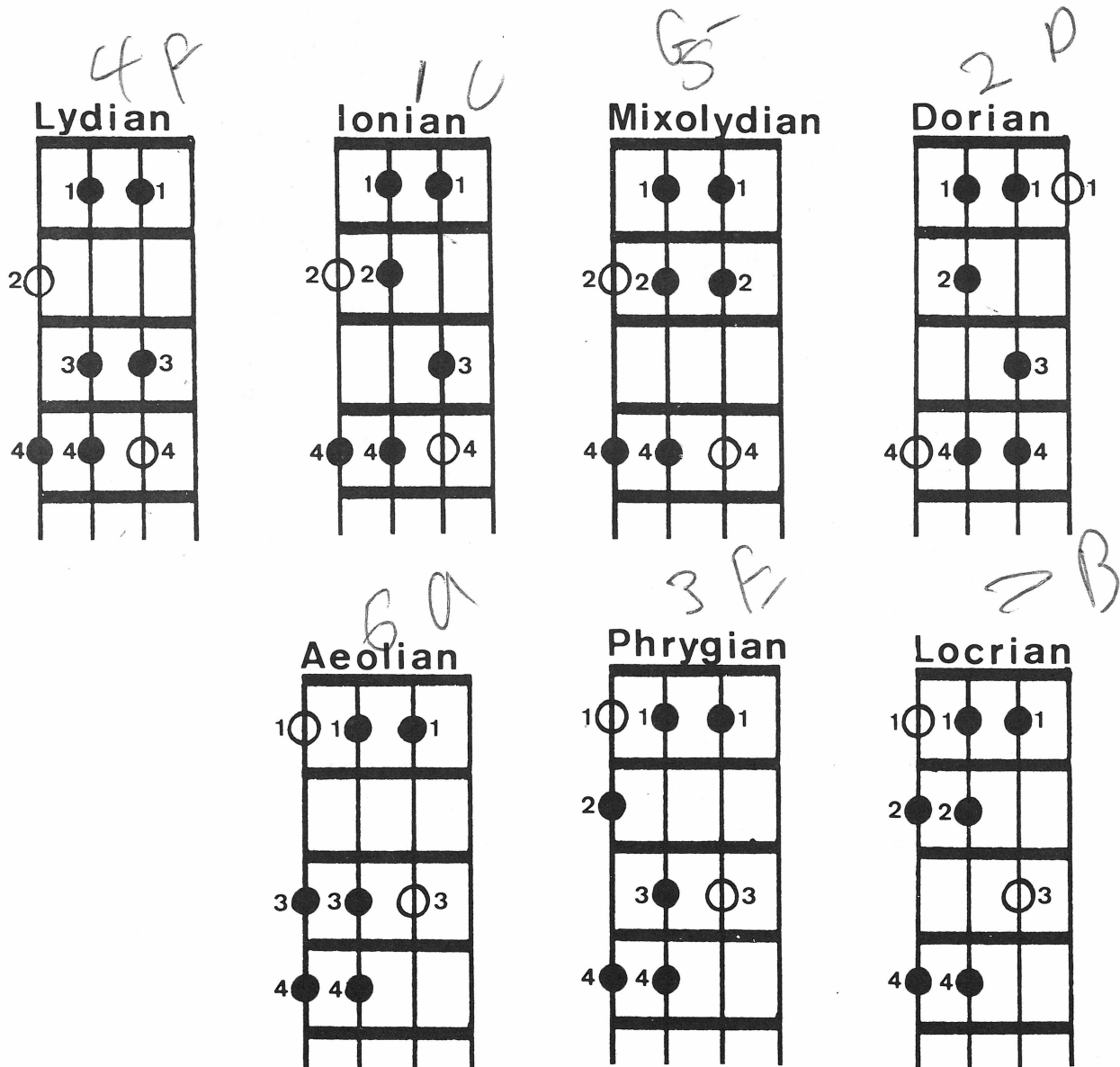
# FINGERING GUIDE

by Tom Fowler

Since our purpose in this text is to develop fingerboard visualization techniques, many unusual configurations will be shown. Therefore, in order to utilize fully the examples, some difficult fingering maneuvers must be made manageable. This section will present basic rules of fingering and shifting which will facilitate the playing of these examples.

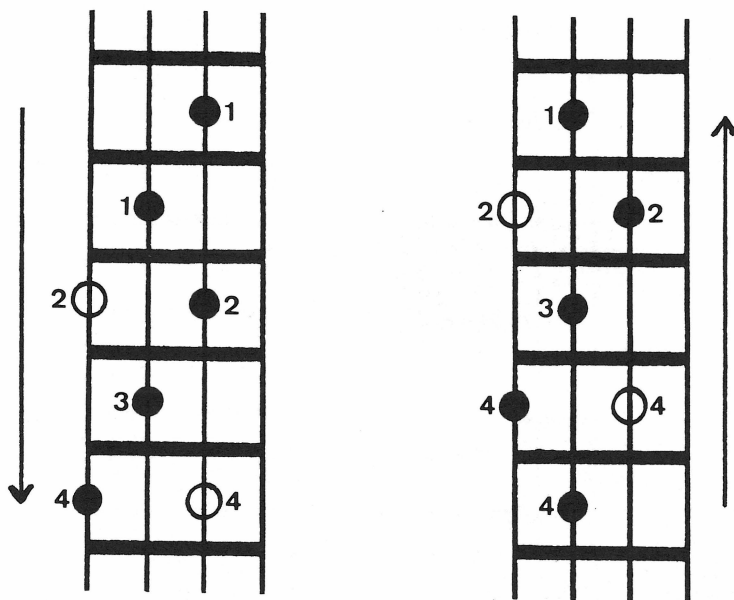
## I. SHIFTLESSNESS

Minimized shifting within a particular scale or passage minimizes the risk of mistakes. If a passage is contained within a twelfth, shifting may prove unnecessary. Here, for example, are easily played fingerings in one position for all the modes:

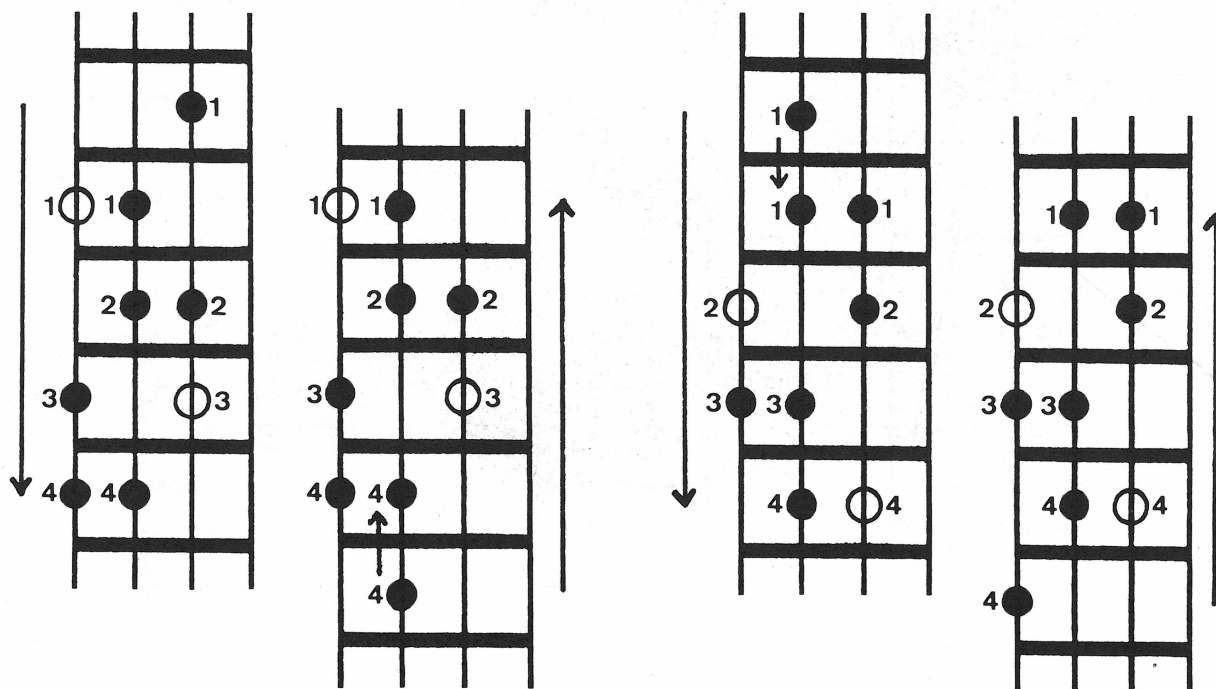


Extending either the first or the fourth finger one fret beyond its normal position while the thumb remains in place allows some scales to be played without shifting position. First-finger extensions usually occur in ascending scales, fourth-finger extensions in descending scales. In the examples, the ascending version of each scale is shown first, then the descending version:

### WHOLE TONE SCALES

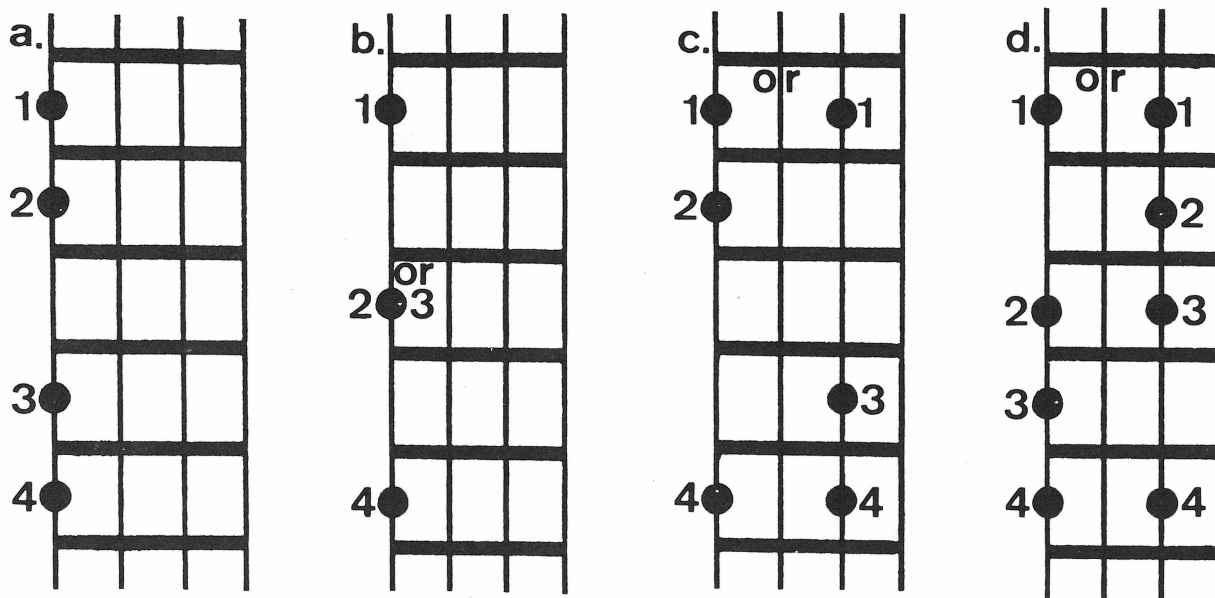


### DIMINISHED SCALES

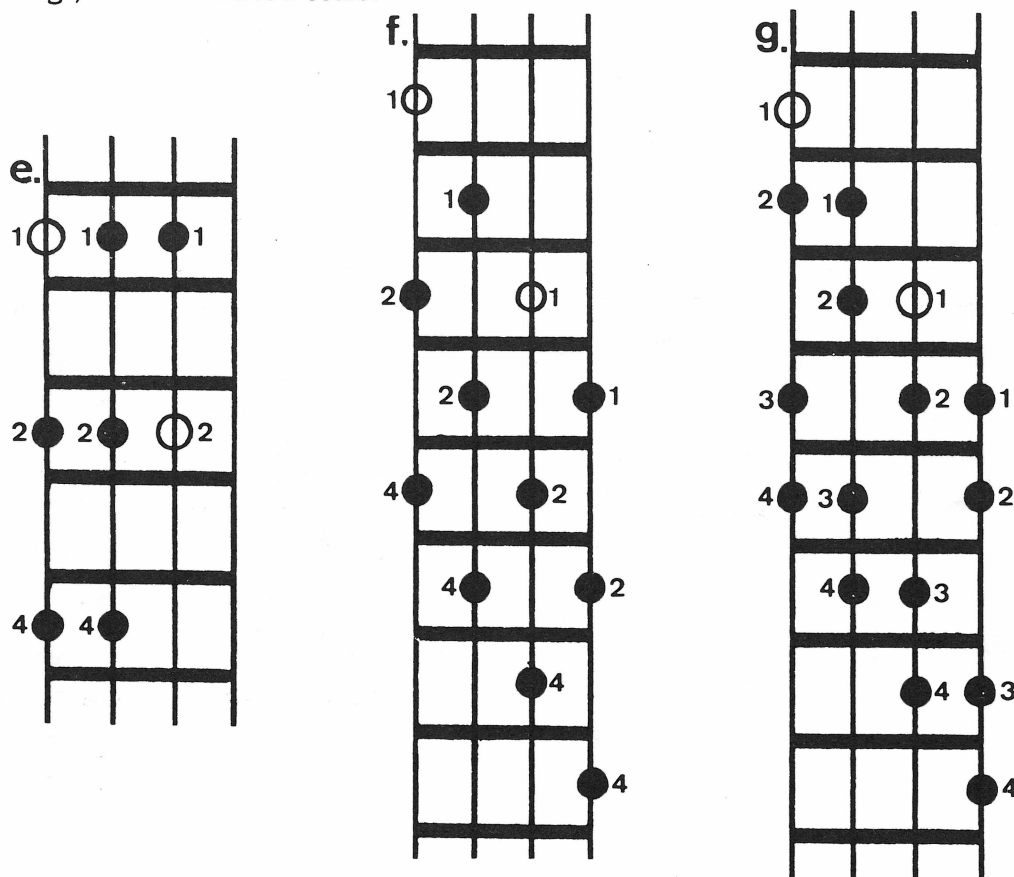


## II. EXPANDED FINGERING

As the above examples show, standard left hand finger-fret alignment covers four consecutive frets, one for each finger. From this basic position, the first and fourth fingers extend and return. At times, however, a Major second occurs between consecutive fingers. The finger spread now covers five consecutive frets and can be considered expanded. The Major second may appear between any two fingers, facilitating: a.) diminished tetrachords, b.) consecutive whole steps, c.) a minor third above or below a minor second, or d.) two consecutive minor seconds above or below a Major second:



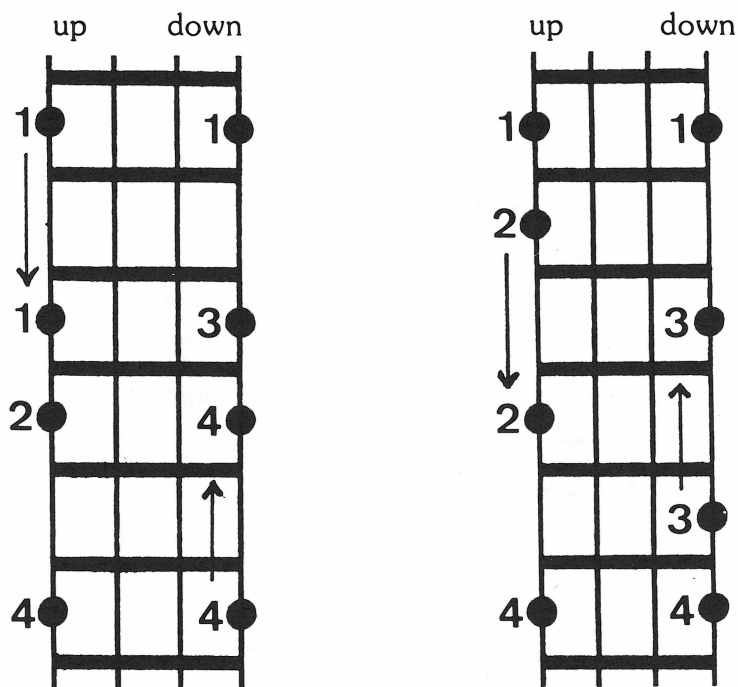
Here are expanded fingering applications for : e.) the Mixolydian mode, f.) the whole tone scale, and g.) the diminished scale:



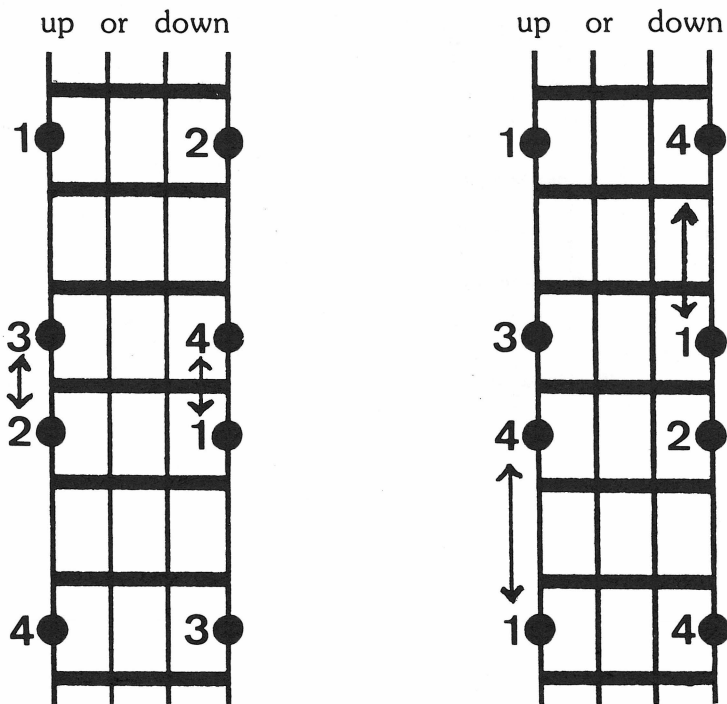


### III. SHIFTING

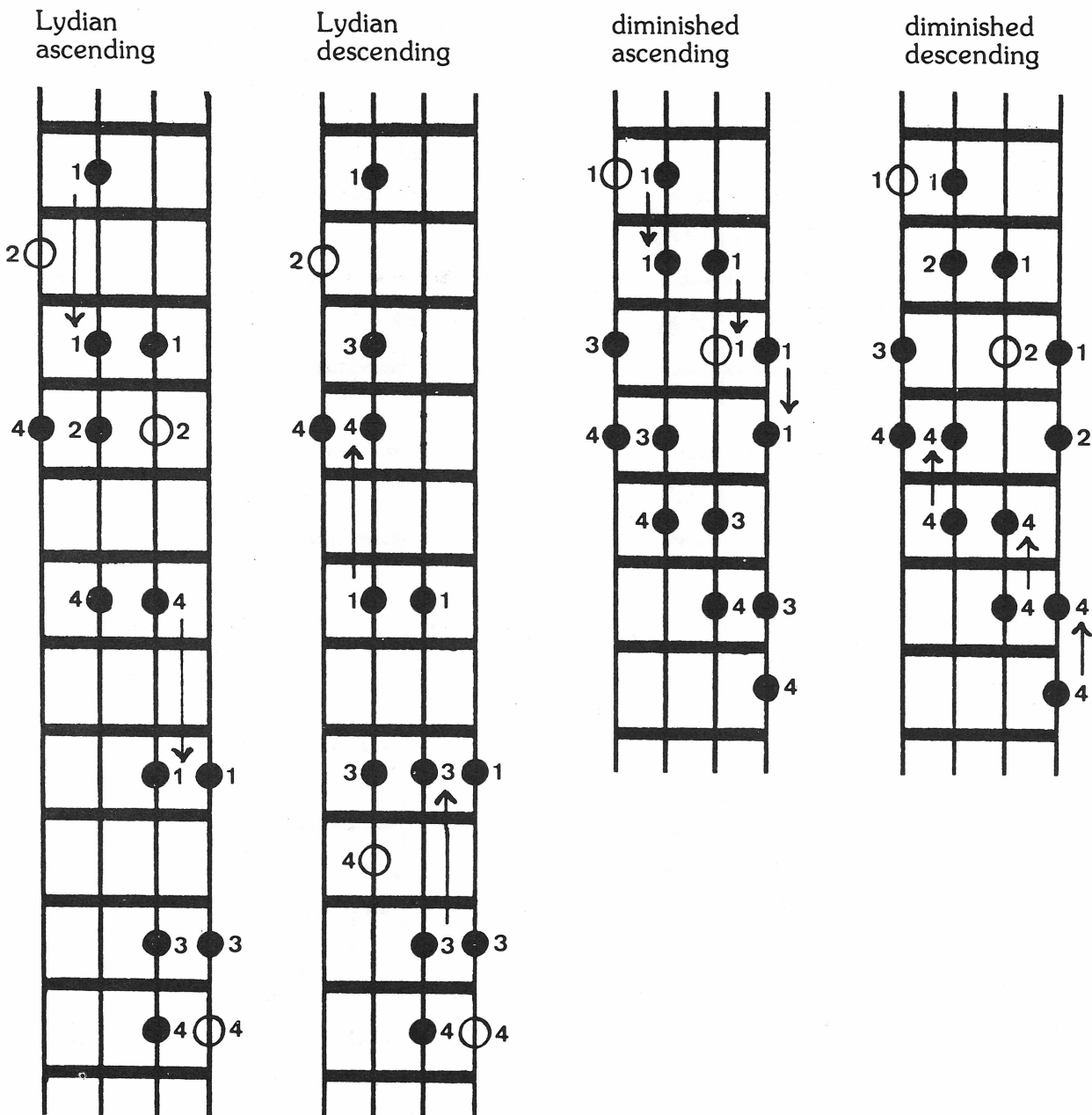
Shifting occurs when the entire hand, including the thumb, travels up or down the neck. Simple shifts move the same finger along the same string. Upward shifts are most easily made by the first or second finger, downward shifts by the fourth or third finger:



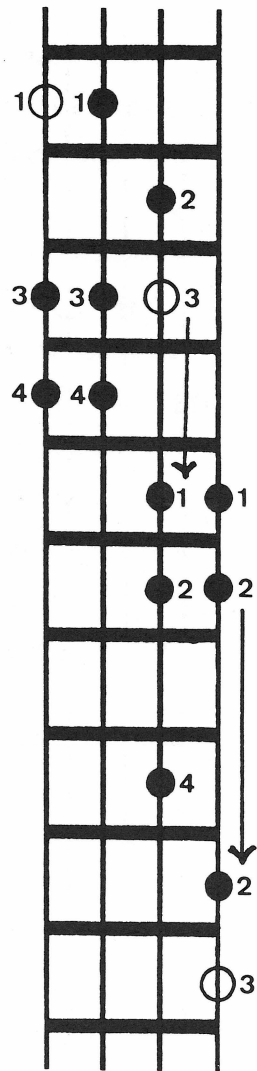
Compound shifts occur when the fingers change as the hand moves up or down the neck. Moving from the third finger to the second while ascending and from the second finger to the third while descending are the easiest such shifts, as shown first in the following examples:



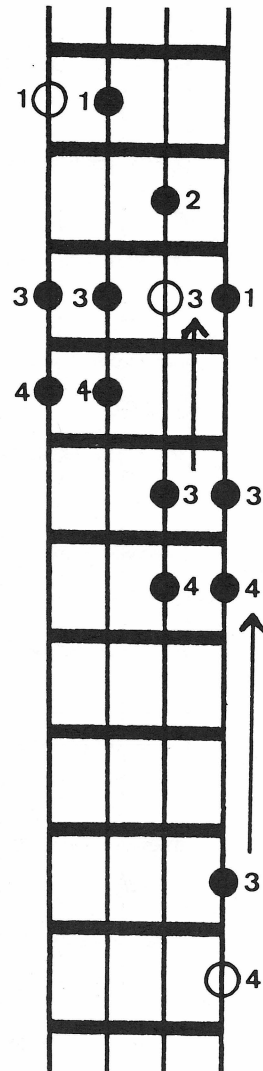
As these examples show, higher-numbered fingers usually shift to lower-numbered fingers on the ascent, and lower-numbered to higher-numbered on the descent. It will be seen in the following examples that two-octave scales usually, but not always, require both simple and compound shifts:



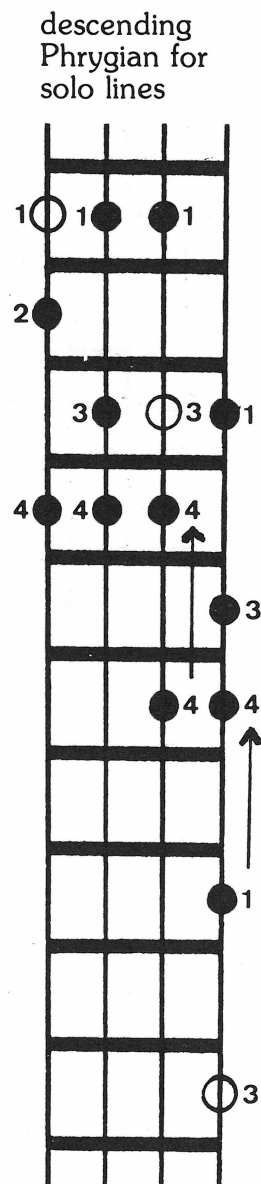
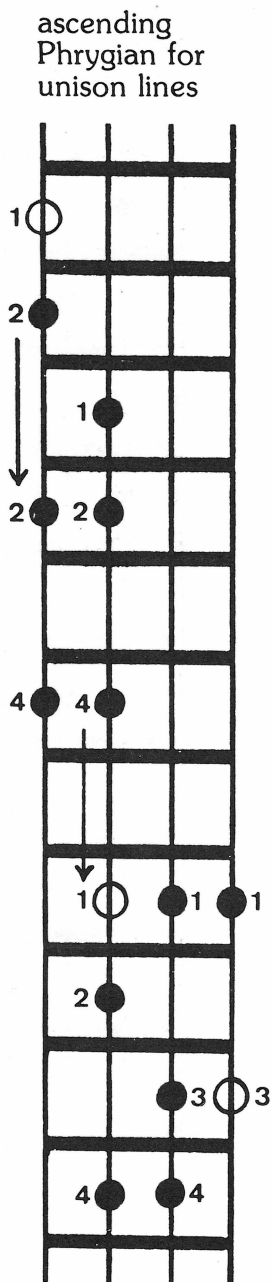
Harmonic  
minor  
ascending



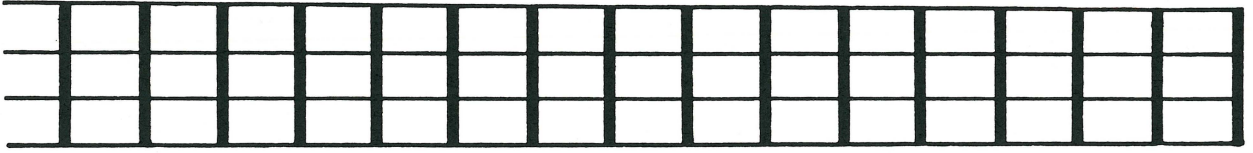
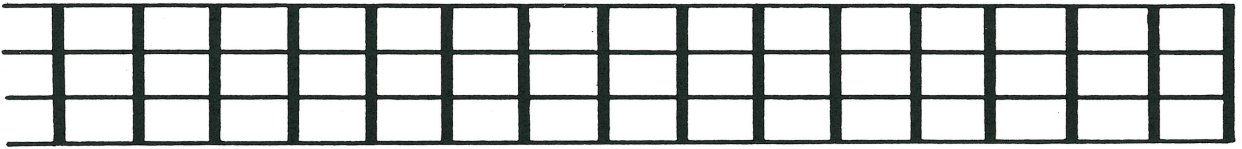
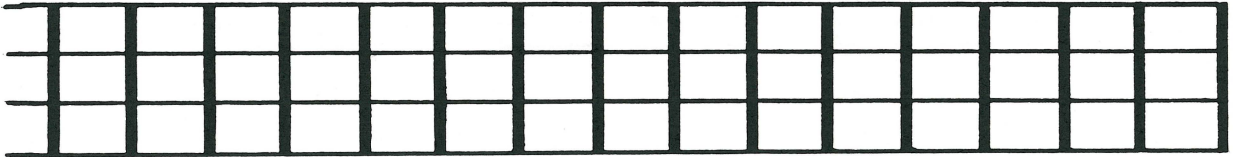
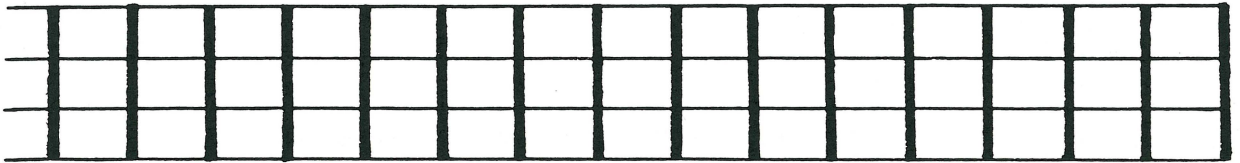
Harmonic  
minor  
descending



Since scale patterns can occur in many different places on the fingerboard, their choice should be based on timbre requirements. For instance, a solo line might sound clearer if the majority of its notes are played on the upper strings, while a unison or octave line with other instruments might sound fuller if most of the notes are played on lower strings:



Sample blank fingerboard to be used in completing exercises



# TRADITIONAL SCALES

All the common scales—Major, minor, or modal—share two common characteristics:

1. They move along all seven notes of the musical alphabet, then repeat the note they started on:

ABCDEFGA      BCDEFGAB      CDEFGABC

2. The resulting eight notes divide into two consecutive four-note segments, two *tetrachords*, separated by either a whole step or a half-step:

DEFG ABCD      EFGA BCDE      FGAB CDEF  
(WHOLE)      (WHOLE)      (HALF)

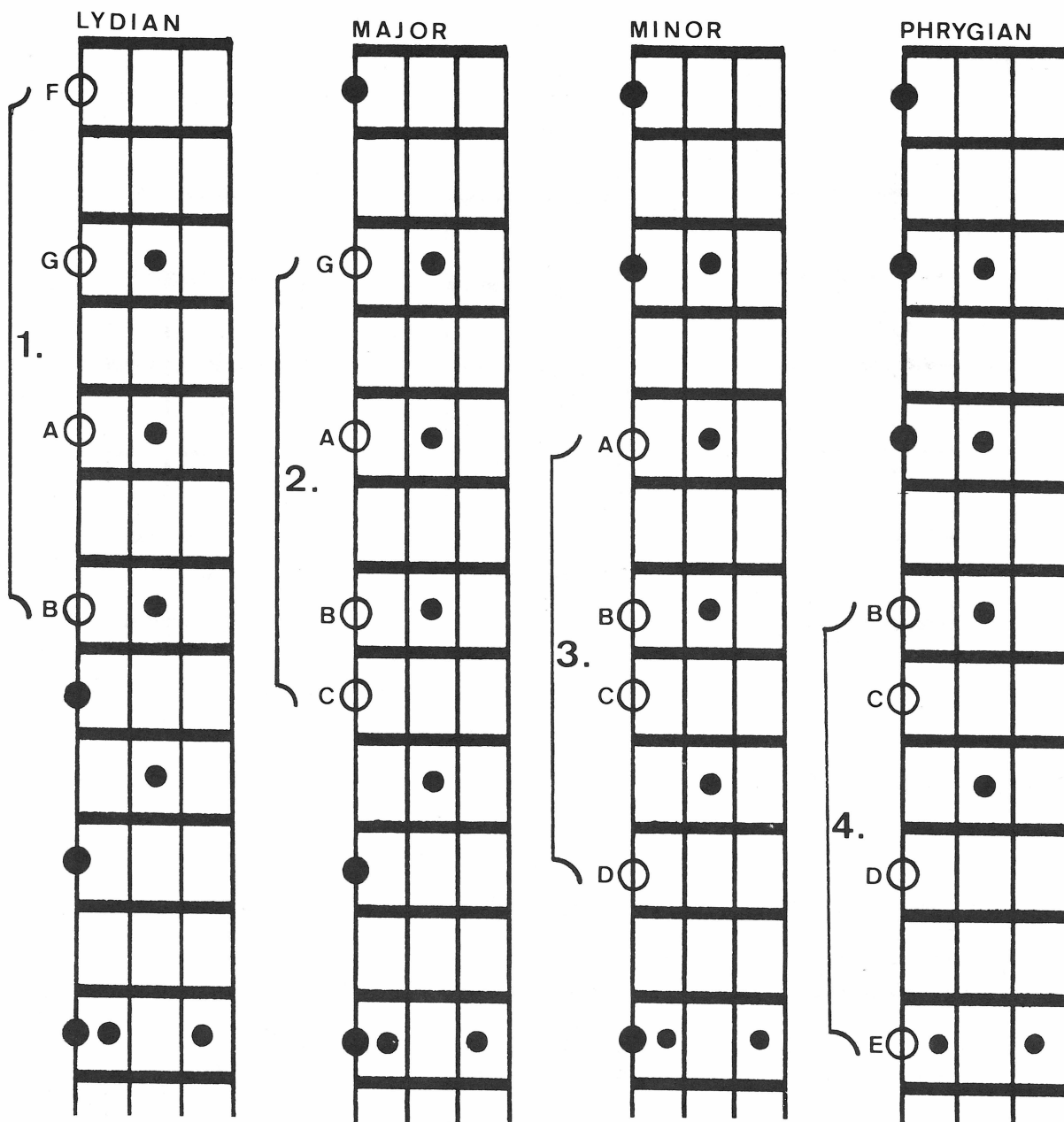
The types of intervals within tetrachords and between tetrachords determine the type of scale they produce. Consequently, pre-knowledge of the various tetrachord patterns eases the visualization of scales.

## TETRACHORD PATTERNS

The natural musical alphabet illustrates four tetrachord types:

1. **Lydian:** Only whole steps occur between adjacent notes, and the outer notes span an augmented fourth.
2. **Major:** A half-step occurs between the two upper notes, and the outer notes span a Perfect fourth.
3. **Minor:** A half-step occurs between the two middle notes, and the outer notes span a Perfect fourth.
4. **Phrygian:** A half-step occurs between the two lower notes, and the outer notes span a Perfect fourth.

When viewed along the same string, these four tetrachord types appear as follows:



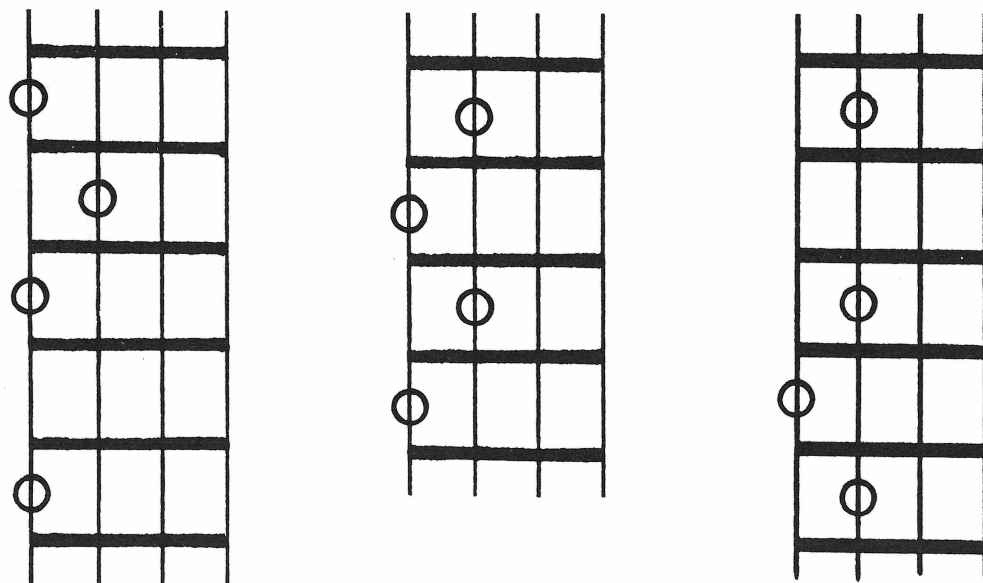
### EXERCISE:

Play each tetrachord pattern on each string in various positions up the fingerboard.

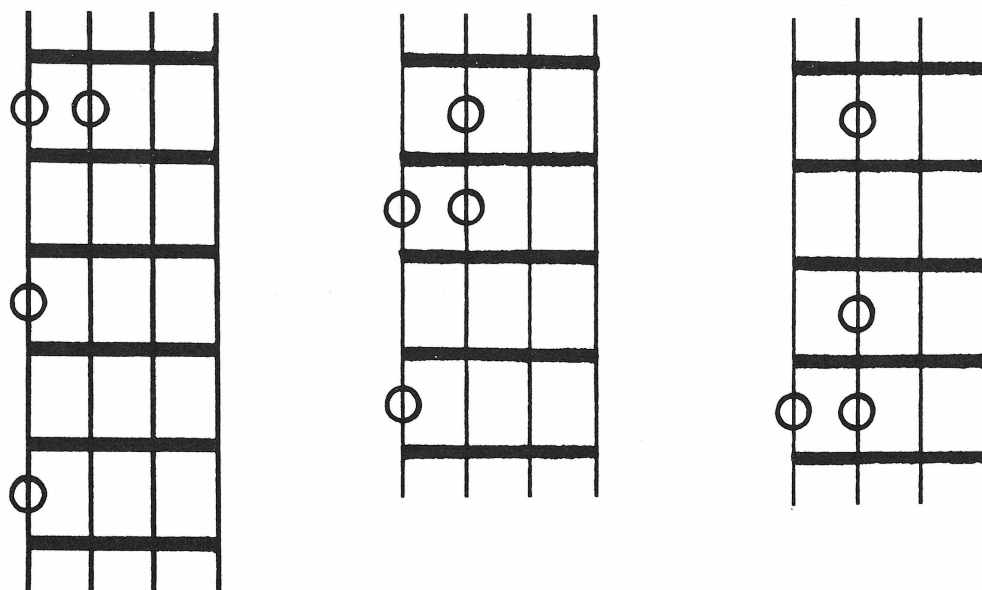


In addition to its single-string form, each tetrachord produces three more patterns across adjacent strings. Each can put three notes on the lower string and one on the upper, two on the lower and two on the upper, or one on the lower and three on the upper. In Lydian patterns, all notes occur on different frets, but in Major, minor, and Phrygian patterns, the beginning and ending notes always lie on the same fret.

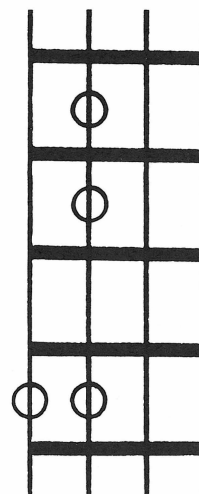
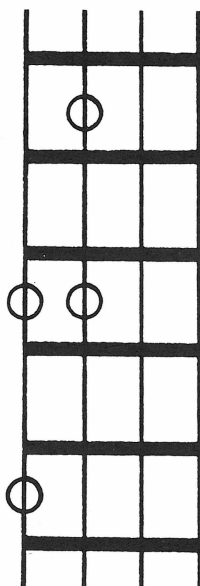
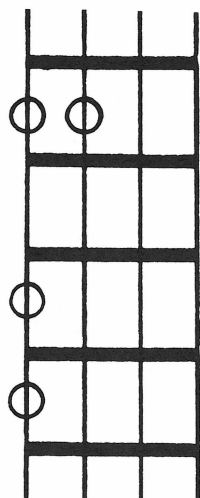
## LYDIAN PATTERNS



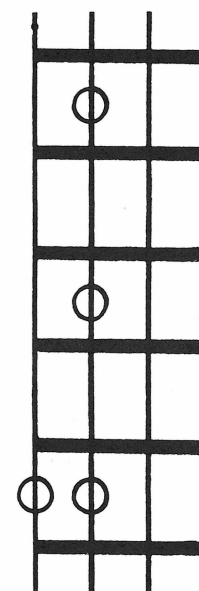
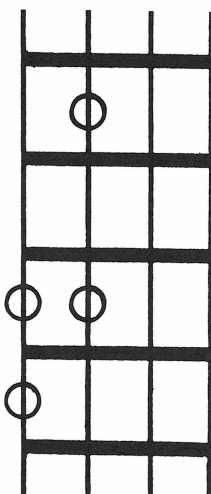
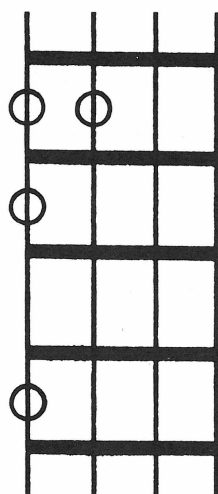
## MAJOR PATTERNS



## MINOR PATTERNS



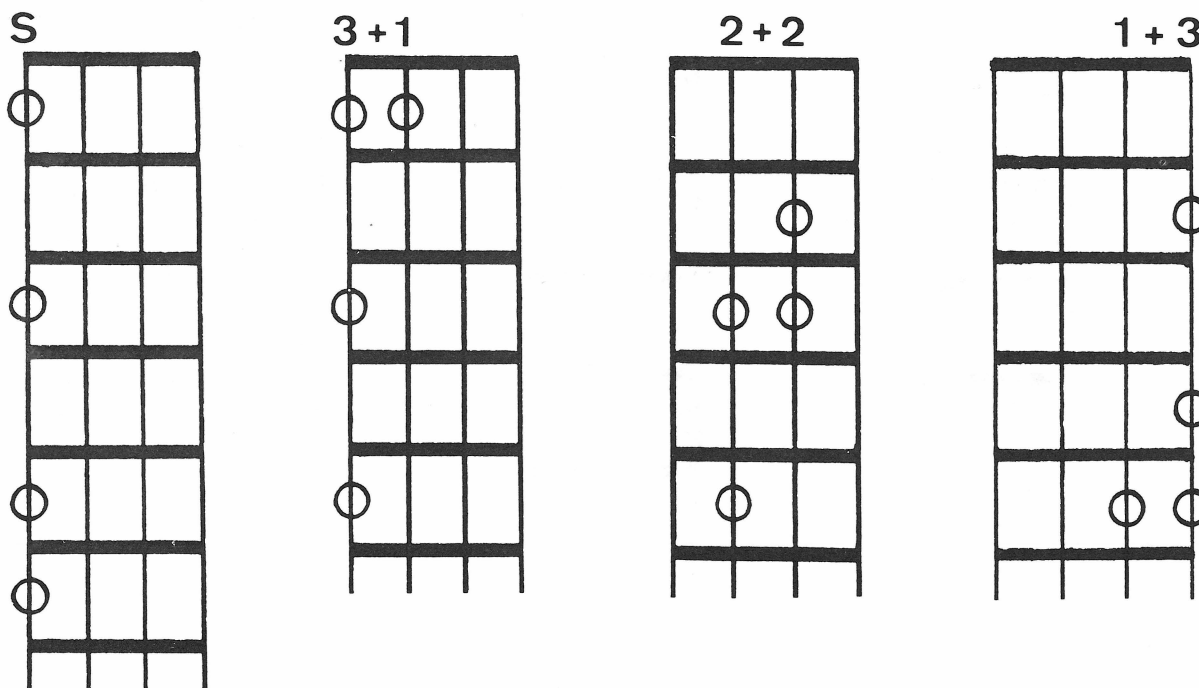
## PHRYGIAN PATTERNS



### EXERCISE:

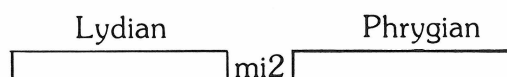
*Play each tetrachord pattern on each pair of adjacent strings in various positions up the fingerboard.*

For later reference, *single-string* (S) will mean all four notes on the same string; *three-plus-one* (3 + 1) will mean three notes on a string and one on the string above it; *two-plus-two* (2 + 2) will mean two notes on a string and two on the string above it; and *one-plus-three* (1 + 3) will mean one note on a string and three on the string above it:



The four tetrachord types shown thus far—Major, minor, Phrygian and Lydian—can combine with themselves or one another in various ways to form twenty-four different scale types, some known by common names like Harmonic minor, Melodic minor, Dorian mode, Major, and so on, and others as yet unnamed. Furthermore, any scale type can appear on the fingerboard as various mixtures of S, 3 + 1, 2 + 2, or 1 + 3 tetrachord patterns.

To demonstrate the variety of fingerboard patterns any given scale type can assume, the first scale to be illustrated, the Major, will show twenty different tetrachord configurations for one octave, including not only the most practical versions, which will be marked by asterisks (\*), but also those more difficult to see and to play. Then, to avoid redundancy, the illustrations for subsequent scale types need only include their more practical versions. After each scale-type heading, two brackets separated by an interval symbol will designate the tetrachord types and the interval between them. In the Lydian mode, for example, the bottom tetrachord is Lydian, the top tetrachord is Phrygian, and a minor second interval separates them. The brackets therefore would show:



## PREPARATORY VISUAL AIDS FOR ONE-OCTAVE SCALES

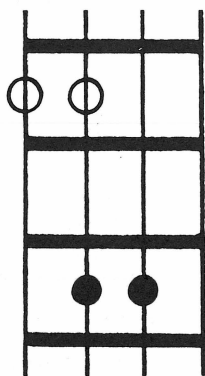
In the fingerboard illustrations, four hollow circles will designate the bottom tetrachord, and four solid dots the top tetrachord.

Consequently, two circles will show the outside notes of the bottom tetrachord, two dots the outside notes of the top tetrachord.

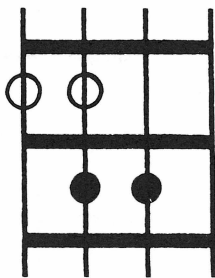
In all 3 + 1, 2 + 2, and 1 + 3 tetrachord patterns, the outside notes occupy adjacent strings on either the same fret (Perfect fourth) or successive frets (augmented fourth).

When the top circle and the bottom dot lie on the same string, their parent one-octave scale always occupies three adjacent strings.

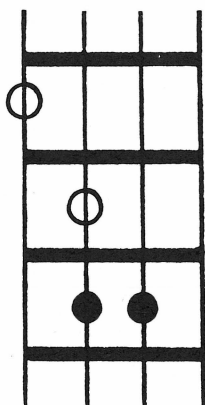
Every such scale contains one or the other of the four following nucleus patterns. Memorizing them now, then recognizing them as they appear throughout the illustrations will benefit both learning and retaining of scale patterns. In Major, melodic and harmonic minor, Dorian, Phrygian, Mixolydian, and Aeolian patterns, a Major second separates two Perfect fourth tetrachords:



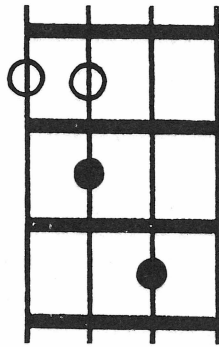
In the diminished scale and other eight-note scales, a minor second separates two Perfect fourth tetrachords:



In the Lydian and Hungarian minor scales, a minor second separates a bottom augmented fourth and a top Perfect fourth tetrachord:



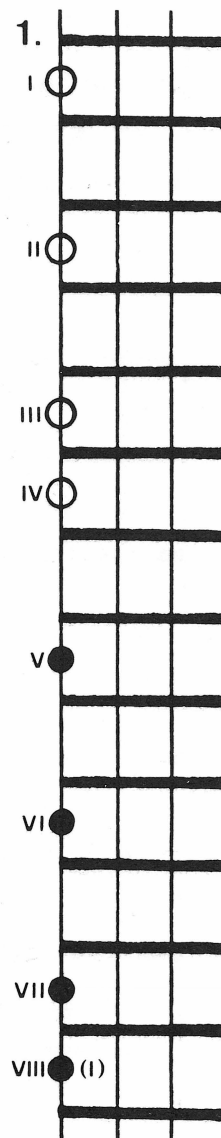
In the Locrian scale, a minor second separates a bottom Perfect fourth and a top augmented fourth tetrachord:



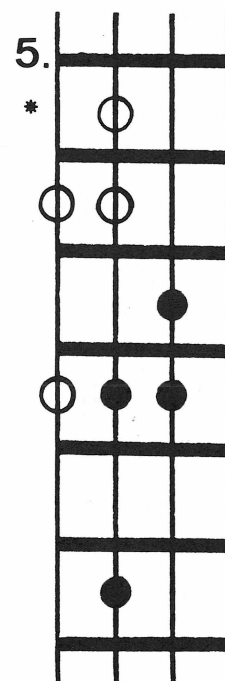
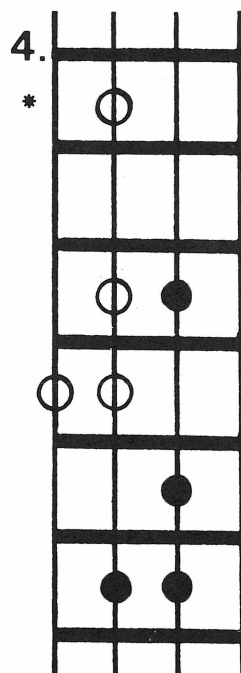
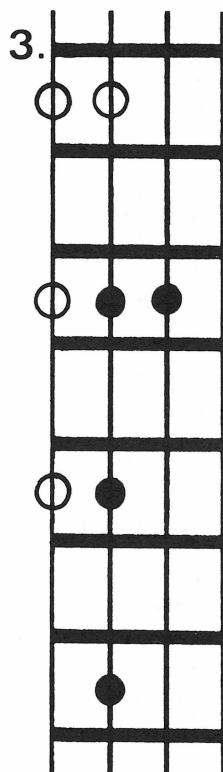
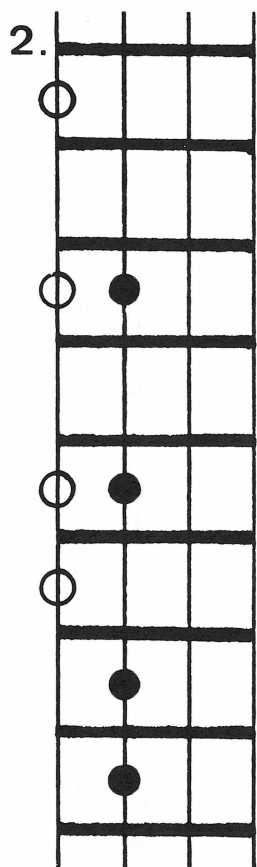
## MAJOR SCALE PATTERNS



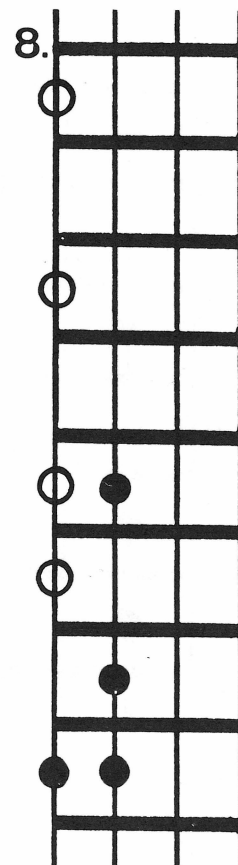
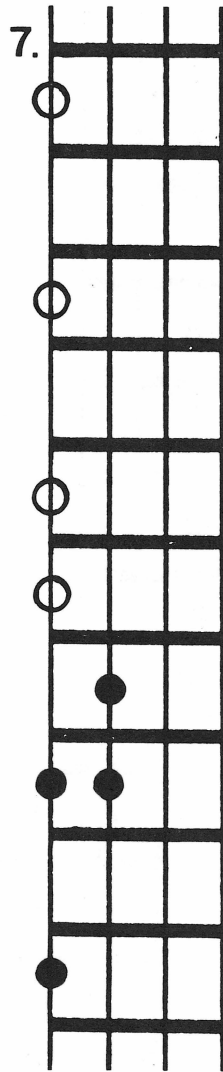
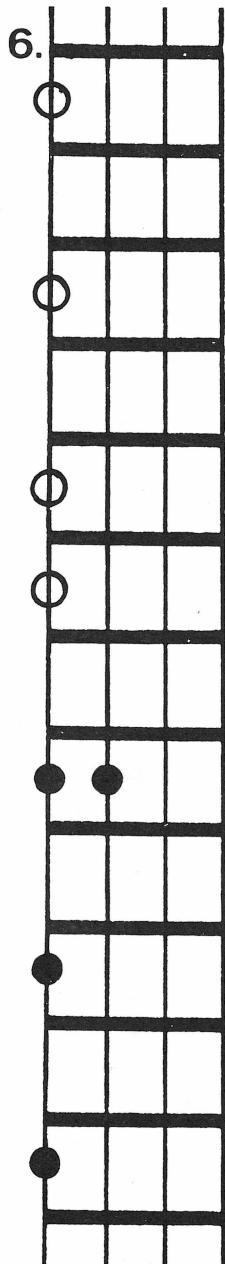
In example one, two similar tetrachord patterns occur up the same string. Each is a Major tetrachord, and they are separated by a Major second interval. The top note is an octave (12 frets) above the bottom note. Roman numerals name the scale degrees from I (tonic note) to its octave repetition:



In examples two, three, four, and five, the upper tetrachord pattern duplicates the lower pattern two frets higher and on different strings:

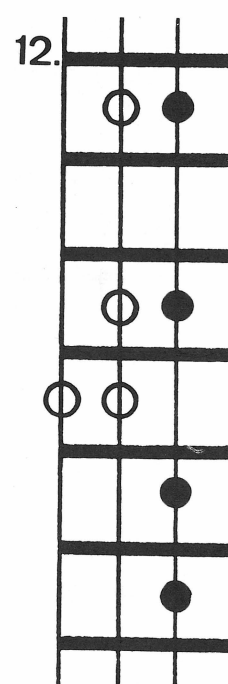
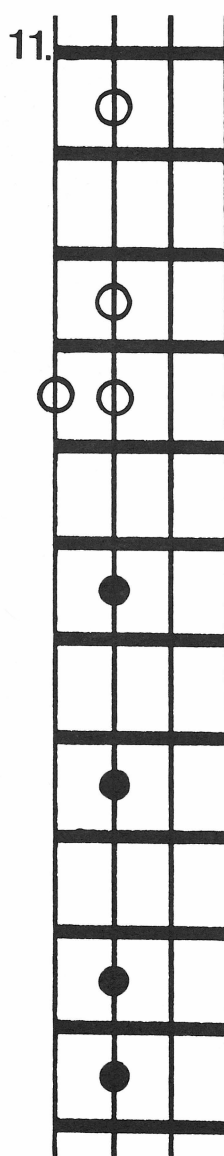
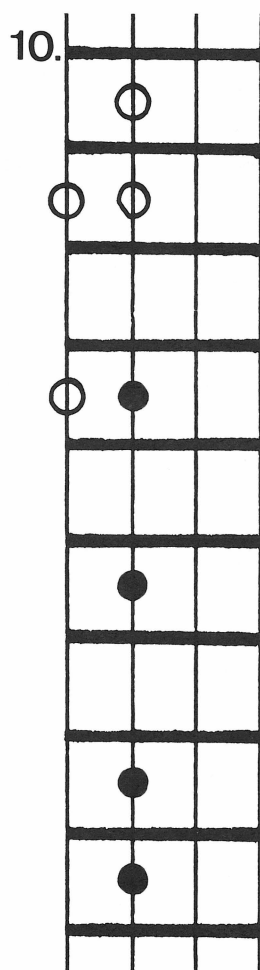
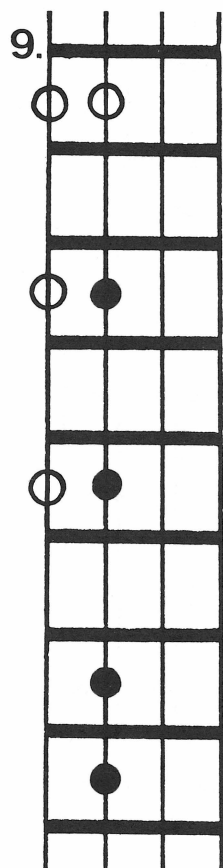


In examples six, seven, and eight, the lower tetrachord pattern occupies one string, and the differing upper pattern occupies two:

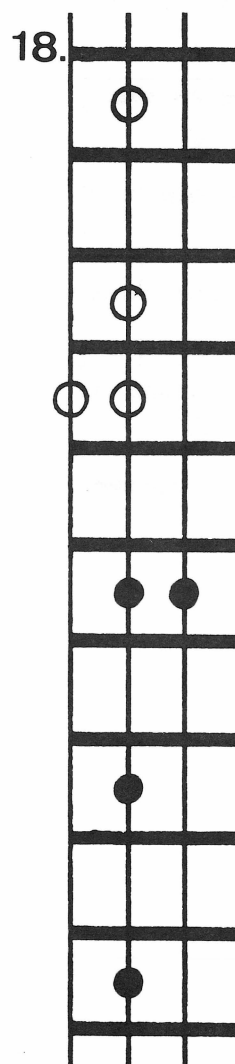
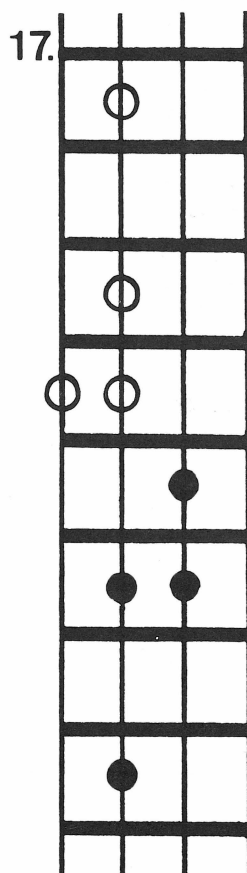
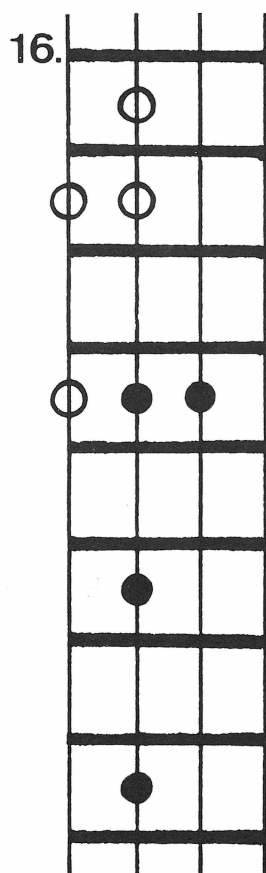
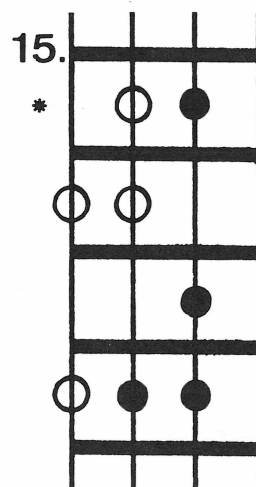
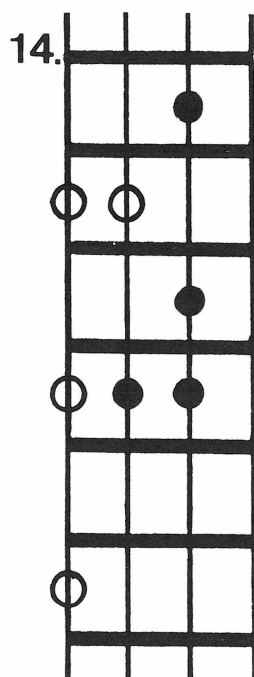
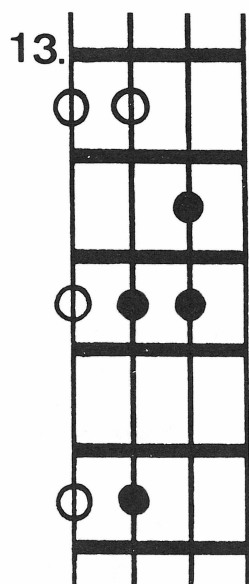




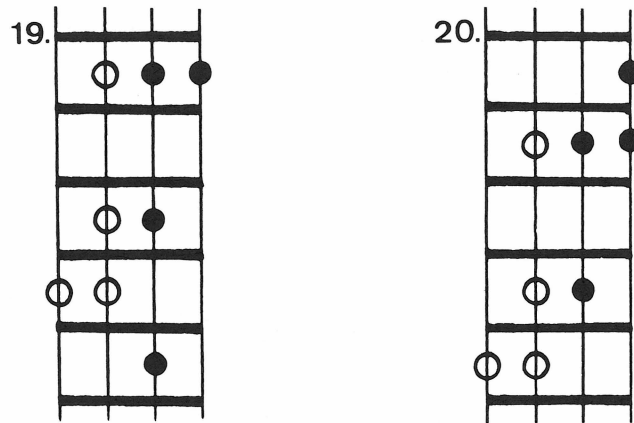
In examples nine, ten, eleven, and twelve, the upper tetrachord pattern occupies one string, and the differing lower pattern occupies two:



In examples thirteen through eighteen, the tetrachord patterns differ, and each occupies two strings:




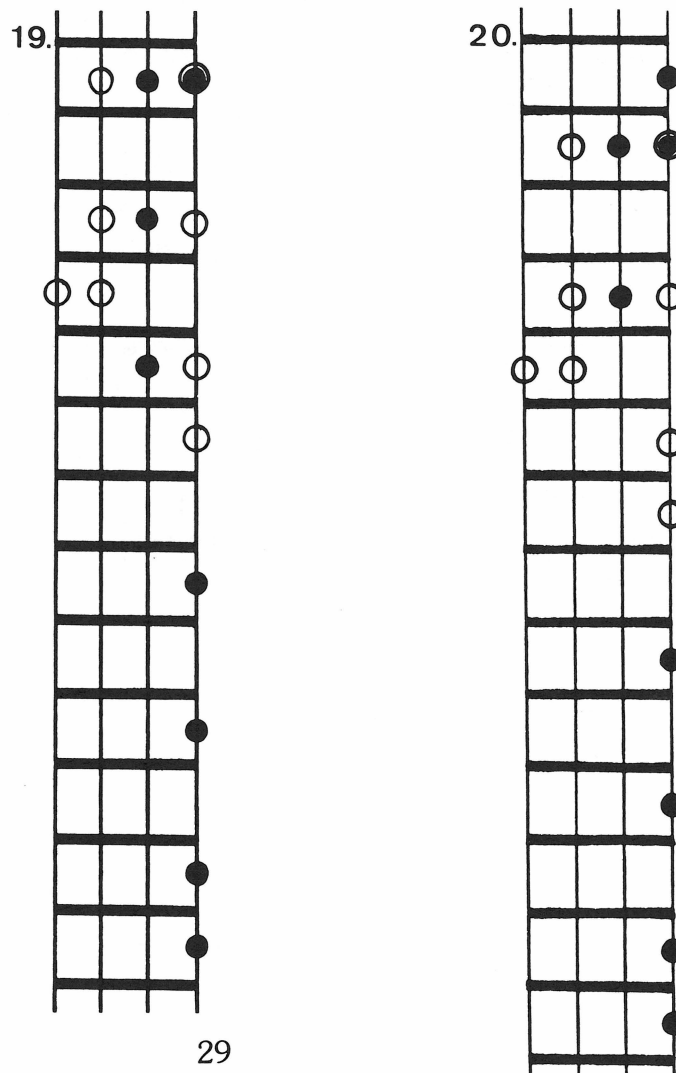
In examples nineteen and twenty, the tetrachord patterns differ, and each occupies a separate pair of strings, thus using all four strings to form a one-octave Major scale:



One-octave Major scales, then, can be played on one string, on two adjacent strings, on three adjacent strings, or on all four strings.

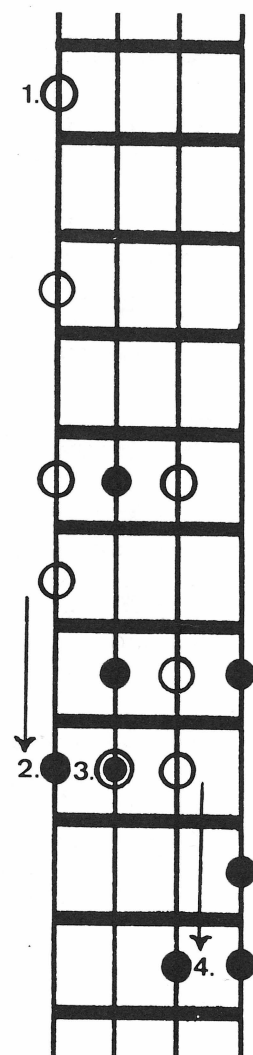
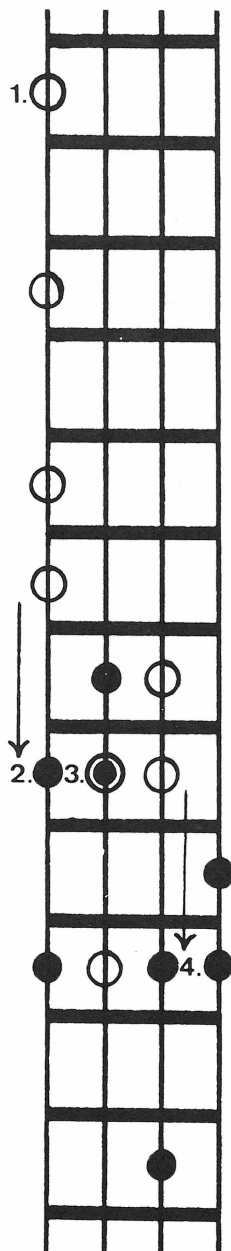
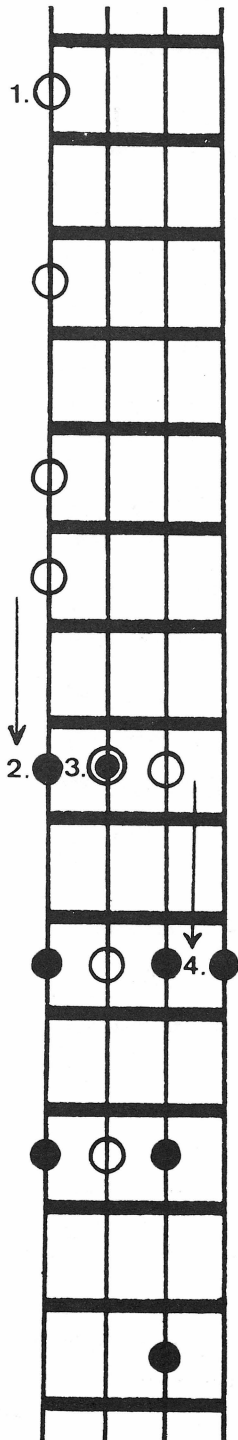
### SCALE EXTENSIONS BEYOND ONE OCTAVE

When a one-octave scale pattern continues upward, its top tonic note becomes the bottom tonic note of the extension, thus conjoining two tetrachords. The unison tonic notes at the point of conjunction will be shown by the symbol . Any of the one-octave patterns, of course, can be extended. But extending examples nineteen or twenty would prove increasingly awkward up to the second full octave, since all such extensions would be restricted to the top string:



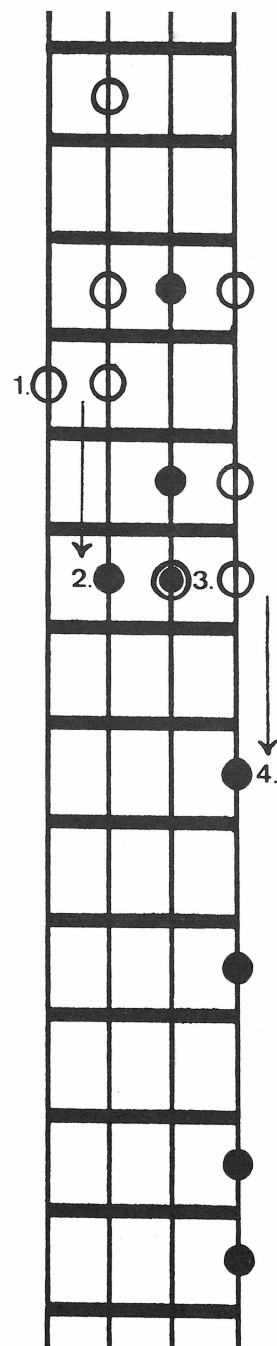
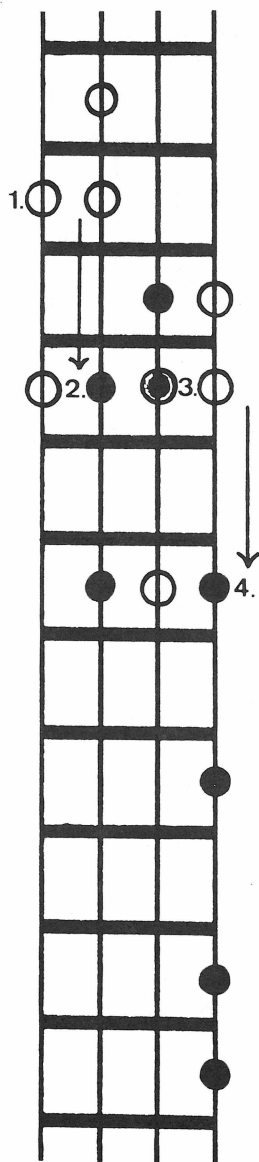
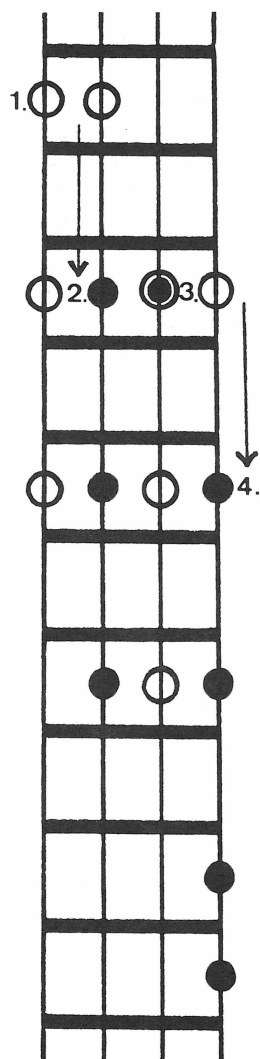
repetitions are both easy to see and easy to remember, as the following step-by-step formula and its examples will demonstrate:

1. Play a single-string tetrachord pattern up the bottom string:
2. Move up two frets and play any two-string pattern. It will now occupy the two bottom strings:
3. Starting on the top note, again play the same pattern. It will now occupy the two middle strings:
4. Slide the top note up two frets and repeat the pattern. It will now occupy the two top strings and will complete the scale:

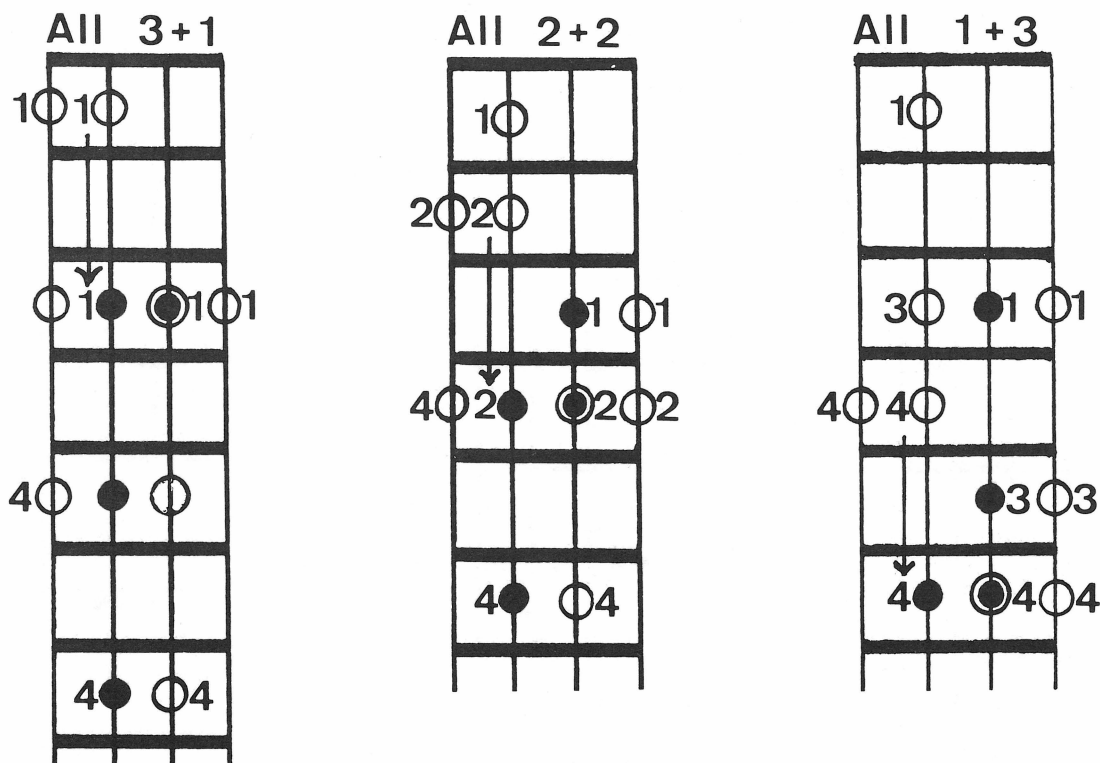


If the top tetrachord is single-string and both tetrachords are the same type, the formula reverses:

1. Play any two-string pattern on the bottom strings:
2. Slide the top note up two frets and play the same pattern. It will now occupy the two middle strings:
3. Starting on the top note, again play the same pattern. It will now occupy the two top strings:
4. Move up two frets and play a single-string pattern. It will now occupy the top string and will complete the scale:



When tetrachord patterns repeat, as they do in each of the above six scales, their fingerings can also repeat. Here are repeated fingerings for repeated Major tetrachords. The blank second note in the three-plus-one tetrachord could be played by either the second or the third finger:

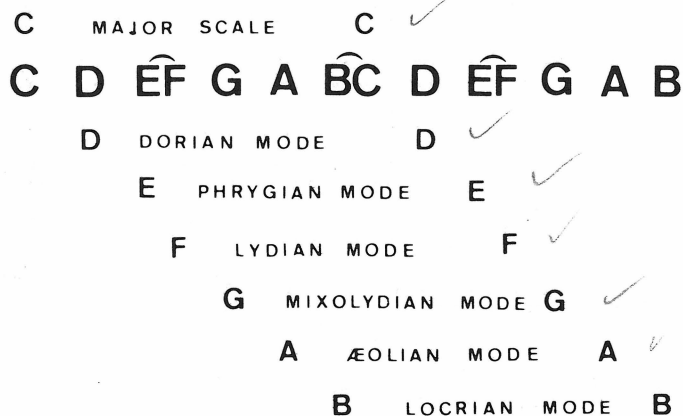


## MODAL SCALES

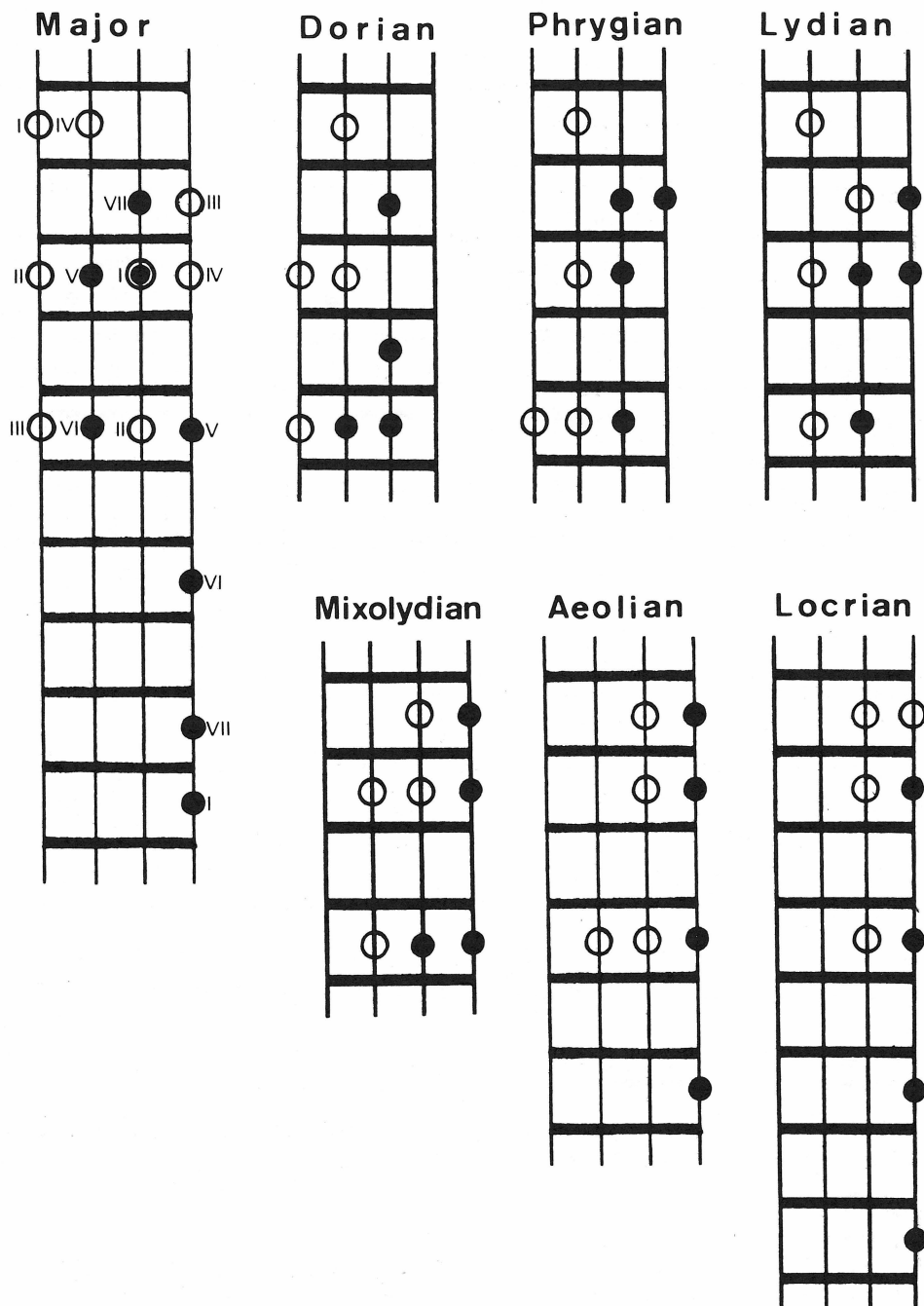
As has been seen, the natural musical alphabet contains seven unaltered letters, which repeat as the alphabet extends to and beyond an octave. Within this alphabet, half-steps occur between E-F and B-C:

A B̂ C D Ê F G A B̂ C D Ê F G A

The seven possible one-octave segments of the extended alphabet show the structure of the seven modes, including the Ionian, which is identical to the Major scale. These modes differ in the relative positions of the E-F and B-C half-steps above and below whichever note is the modal tonic, as illustrated in the following chart:



As the chart also demonstrates, modal scales are one-octave segments of some extended Major scale, in this case the scale of C Major. In any extended Major scale fingerboard pattern, therefore, from II to II will be a one-octave Dorian pattern, from III to III a Phrygian, from IV to IV a Lydian, from V to V a Mixolydian, from VI to VI an Aeolian, and from VII to VII a Locrian. Here, for example, are the modal patterns lying within one of the two-octave Major scales:



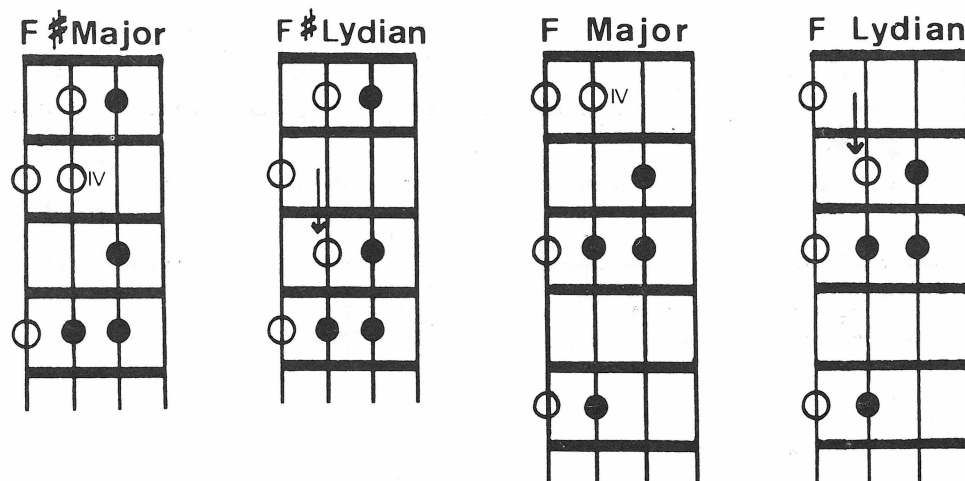
The Mixolydian pattern derived from this particular Major pattern is especially compact, occupying only four frets on three strings. But the Locrian pattern stretches out twice that far along two strings. Within other Major scale patterns, though, the fret span of derived modal patterns reverses—the Mixolydian pattern lengthens, while the Locrian shortens. Finding the most practical versions of one-octave modal scales is only a matter of applying the process demonstrated above to other two-octave Major patterns.



## EXERCISE:

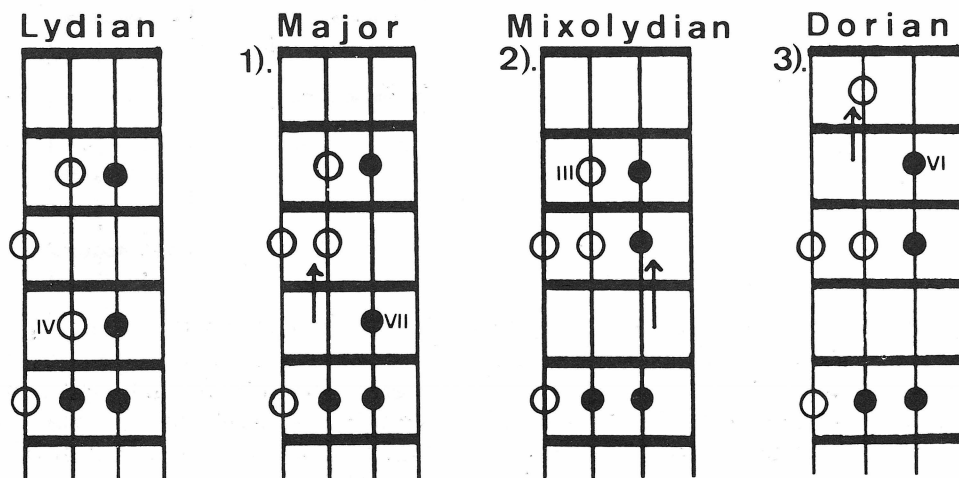
Examine each of the two-octave Major scale patterns previously illustrated. On blank fingerboards, record those modal scales found to be compact.

One-octave modal patterns may also be derived by altering one-octave Major scales. In this method the modal tonics will be the same note as the Major tonic—C Major, C Dorian, C Phrygian, and so on. The Major scale will alter one or more of its notes by half-step to become each mode. Only one mode, the Lydian, raises a note from the Major scale model. This note is degree IV in the Major scale:

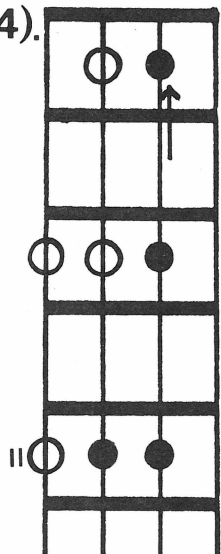


Since raising degree IV of any Major pattern produces a Lydian pattern, lowering degree IV of any Lydian pattern produces a Major. From that point on, the other modal patterns occur by lowering one note at a time in the following order:

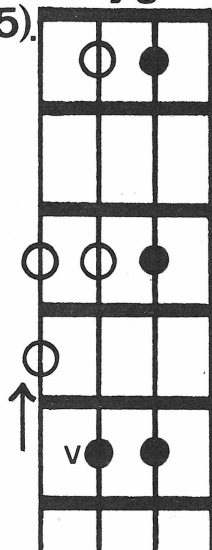
- 1.) Lowering degree IV of any Lydian pattern produces an Ionian (Major scale) pattern.
- 2.) Lowering degree VII of any Ionian pattern produces a Mixolydian pattern.
- 3.) Lowering degree III of any Mixolydian pattern produces a Dorian pattern.
- 4.) Lowering degree VI of any Dorian pattern produces an Aeolian (descending melodic minor scale) pattern.
- 5.) Lowering degree II of any Aeolian pattern produces a Phrygian pattern.
- 6.) Lowering degree V of any Phrygian pattern produces a Locrian pattern.



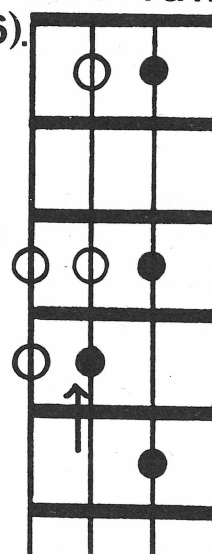
#### 4). Aeolian



#### 5). Phrygian



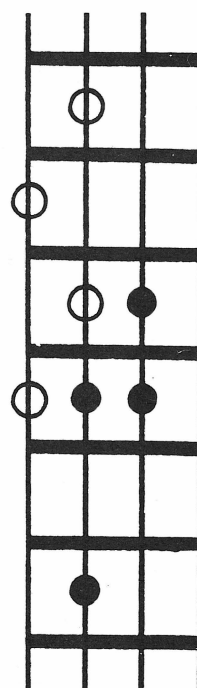
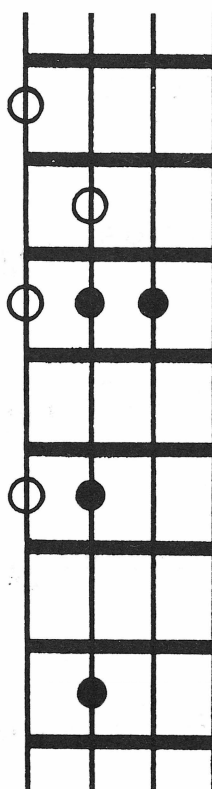
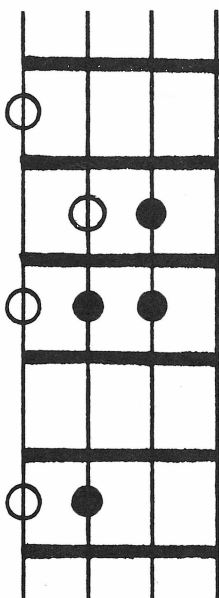
#### 6). Locrian



In the above consecutive patterns, a Roman numeral identifies the next note to be lowered; then an arrow marks its new position in the next mode. Before being lowered, each of these notes is the bottom member of a half-step, and after being lowered, it is the top member of another half-step one degree down the pattern.

#### EXERCISE:

Apply the above six steps to the following Lydian patterns, paying particular attention to half-step locations.



In addition to comparing the Lydian and Mixolydian structures directly to the Major scale, the six steps show how many and which Major scale degrees must be lowered to produce the remaining modes.

Given that lowering VII of the Major scale (Step 2) produces the Mixolydian mode, it follows that:

Lowering VII plus III (Step 3) produces the Dorian;

Lowering VII and III plus VI (Step 4) produces the Aeolian;

Lowering VII, III and VI plus II (Step 5) produces the Phrygian; and

Lowering VII, III, VI, and II plus V (Step 6) produces the Locrian.

### EXERCISE:

*Apply each of the above modal formulas to various Major scale patterns.*

The one remaining method of visualizing the modes is to construct them according to their lower and upper tetrachord types and to the interval between tetrachords. These modal structures are:

Lydian:  $\overbrace{\text{LYDIAN}} \text{mi } 2 \overbrace{\text{MAJOR}}$

Mixolydian:  $\overbrace{\text{MAJOR}} \text{M } 2 \overbrace{\text{MINOR}}$

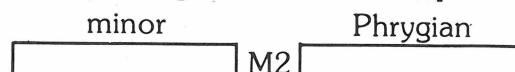
Dorian:  $\overbrace{\text{MINOR}} \text{M } 2 \overbrace{\text{MINOR}}$

Aeolian:  $\overbrace{\text{MINOR}} \text{M } 2 \overbrace{\text{PHRYGIAN}}$

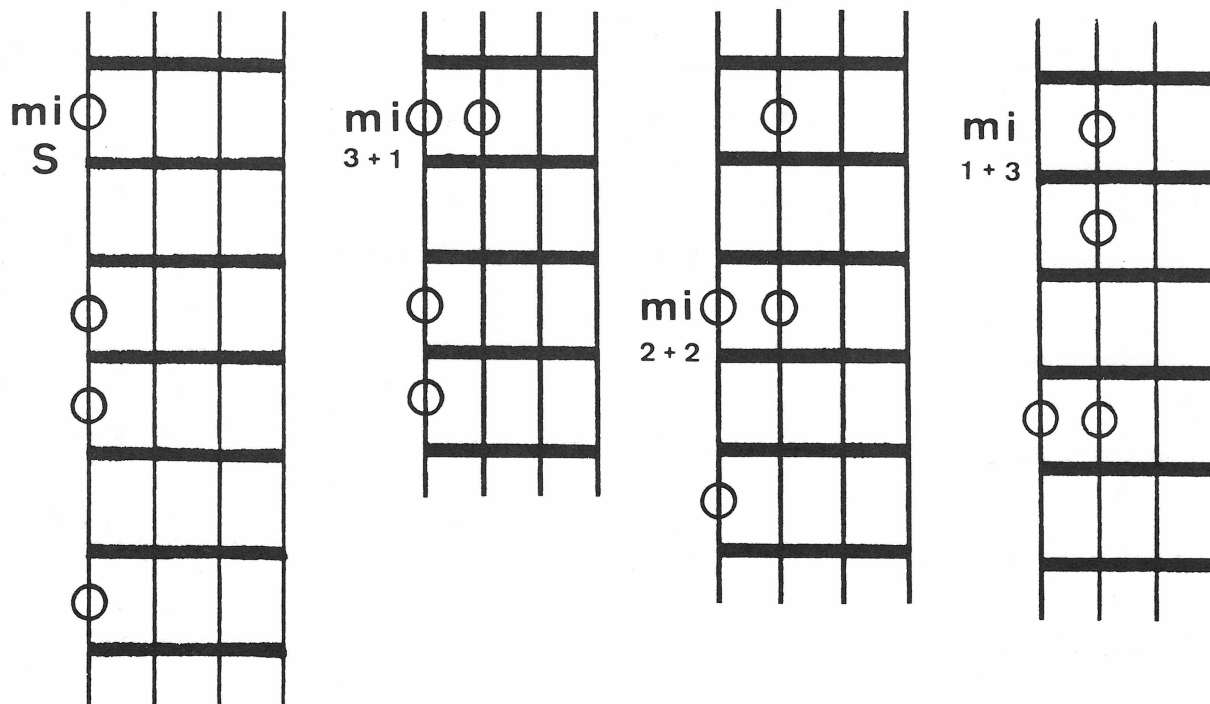
Phrygian:  $\overbrace{\text{PHRYGIAN}} \text{M } 2 \overbrace{\text{PHRYGIAN}}$

Locrian:  $\overbrace{\text{PHRYGIAN}} \text{mi } 2 \overbrace{\text{LYDIAN}}$

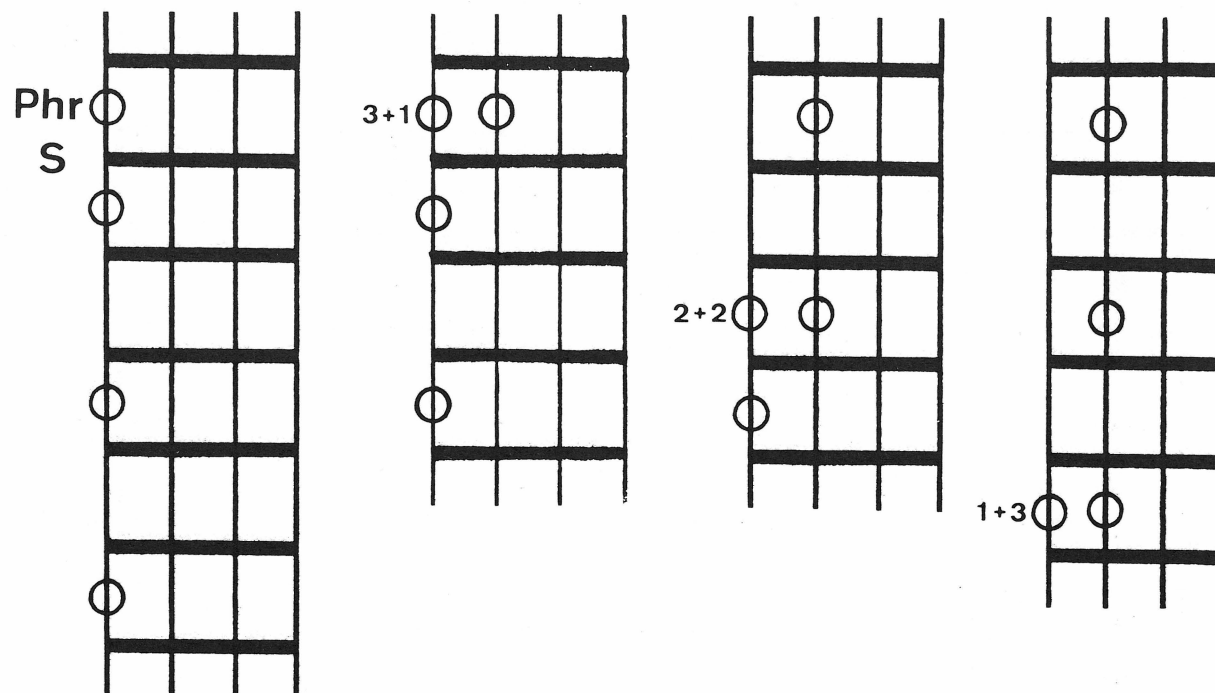
In any one of these structures, each tetrachord can assume any of its four possible patterns (S, 3 + 1, 2 + 2, or 1 + 3). These tetrachord patterns then can combine into different one-octave scale patterns. Here is a step-by-step process for finding these one-octave patterns, a process now applied to the Aeolian structure:



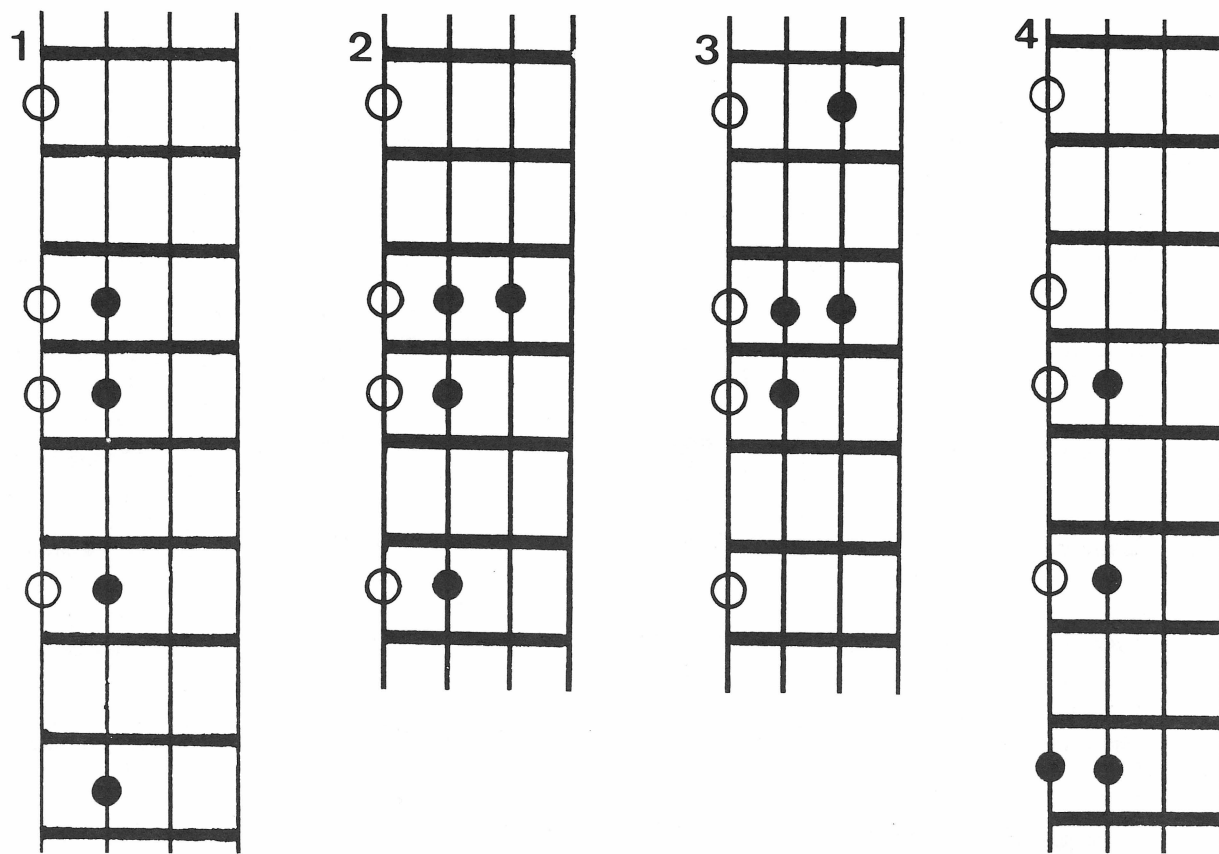
**STEP ONE:** Visualize the four patterns for the bottom tetrachord:



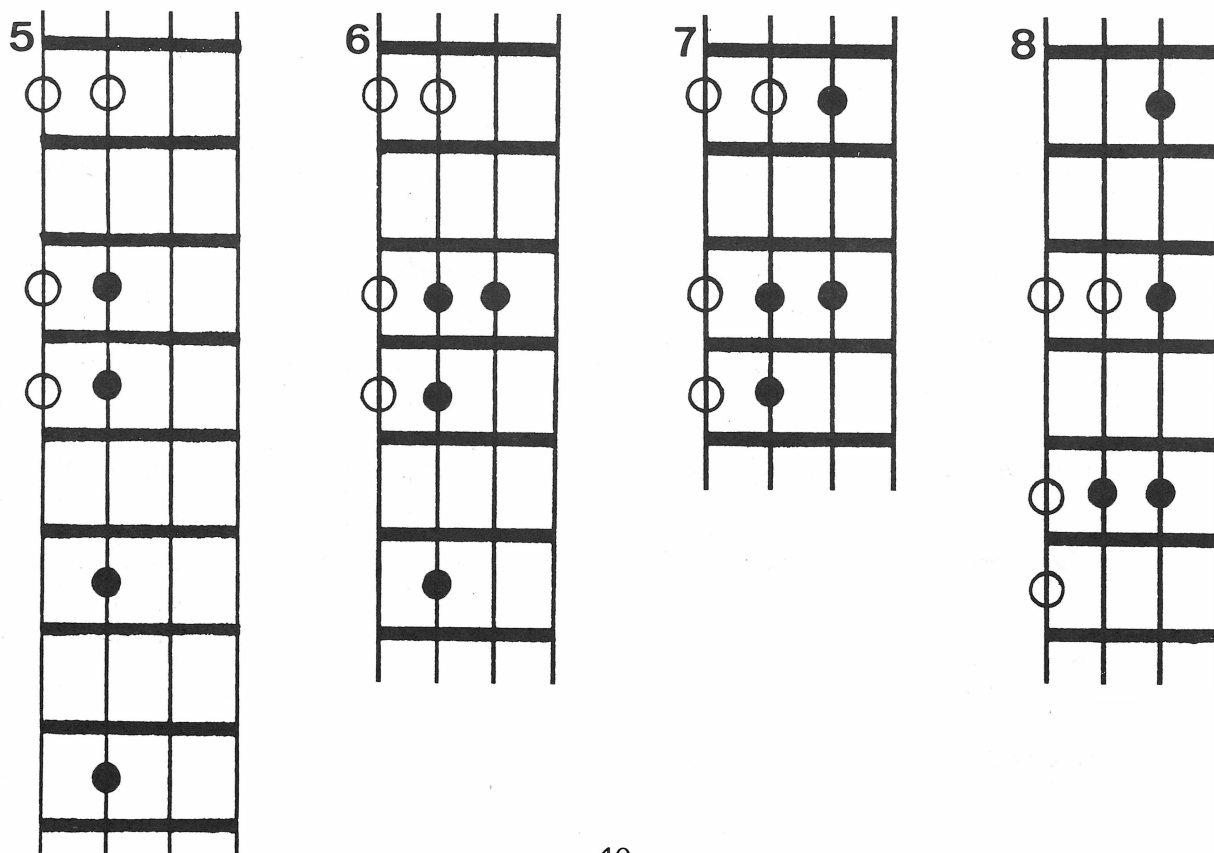
**STEP TWO:** Visualize the four patterns for the top tetrachord:



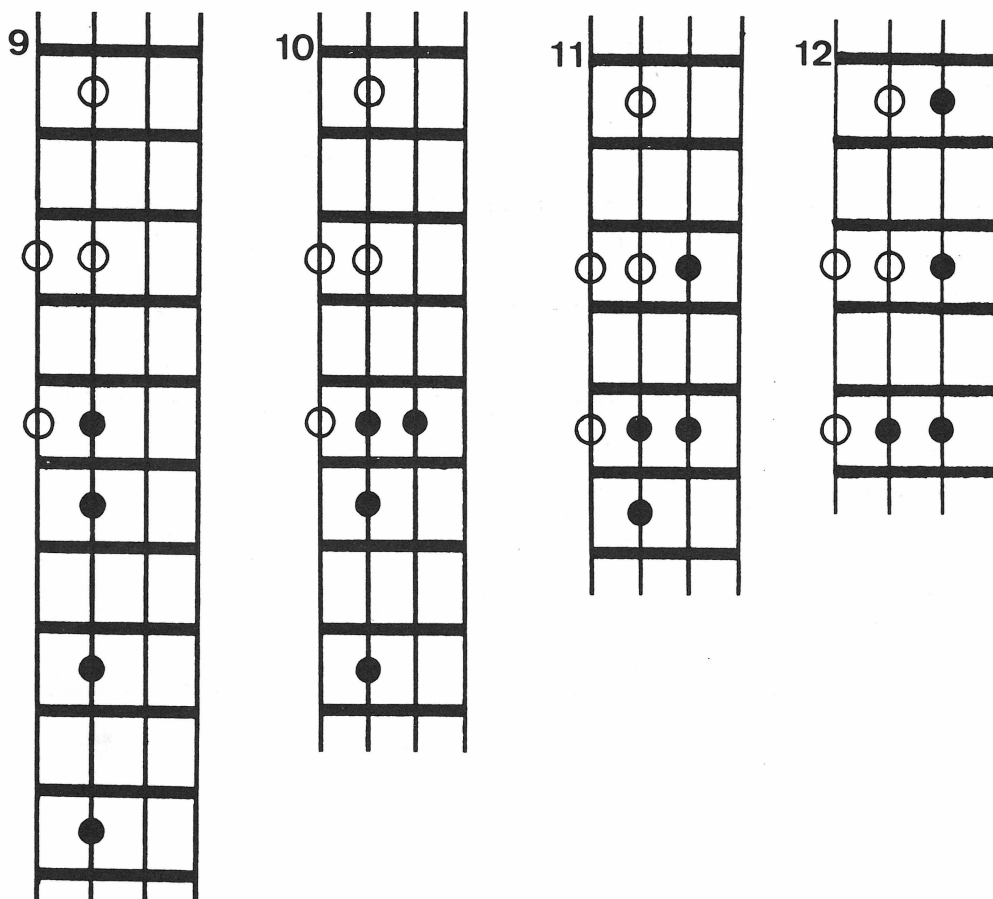
**STEP THREE:** Put each top pattern in turn over the bottom single-string pattern, always separating the two patterns by the designated interval, in this case a Major second:



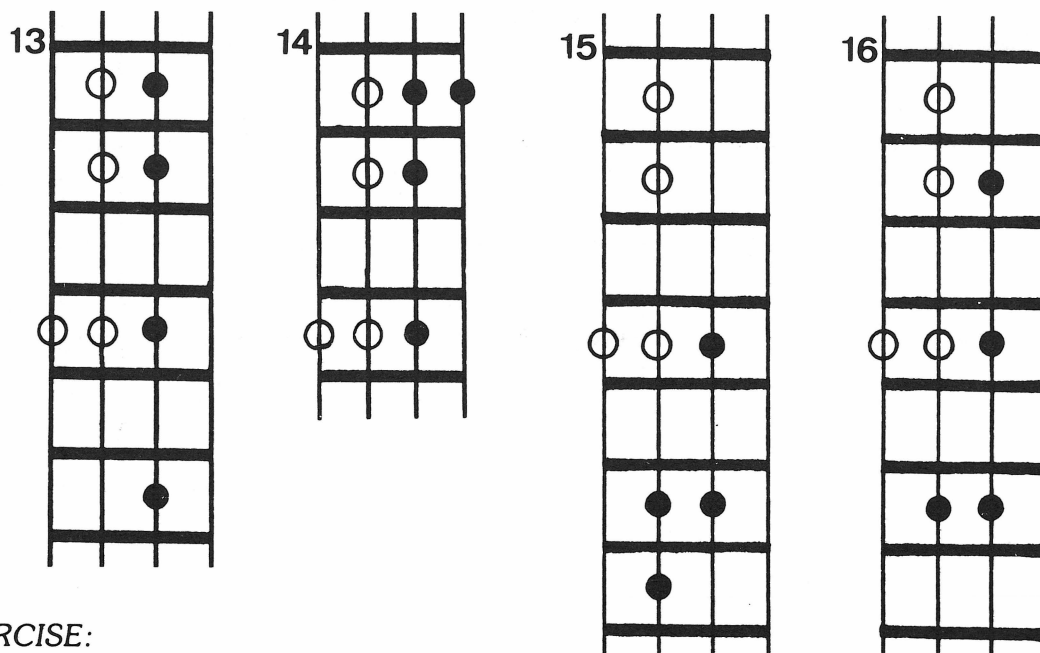
**STEP FOUR:** Put each top pattern over the bottom 3 + 1 pattern:



**STEP FIVE:** Put each top pattern over the bottom 2 + 2 pattern:



**STEP SIX:** Put each top pattern over the 1 + 3 bottom pattern:

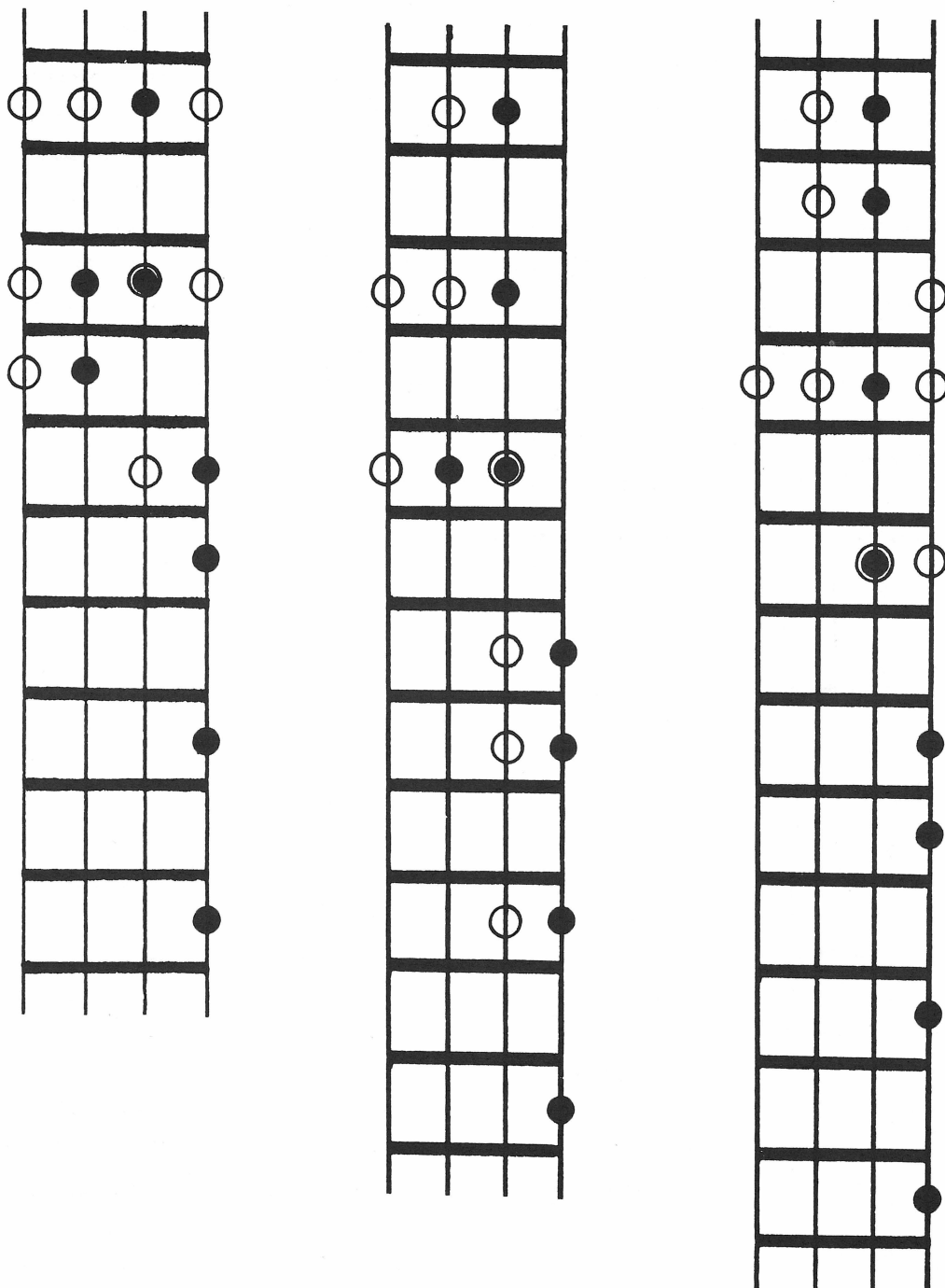


**EXERCISE:**

*Apply the above six steps to the Dorian, Phrygian, Lydian, Mixolydian, and Locrian modes.*

## EXTENDED SCALES

Any one-octave pattern on three strings can be extended to two octaves by conjoining its top note to any two-string pattern:

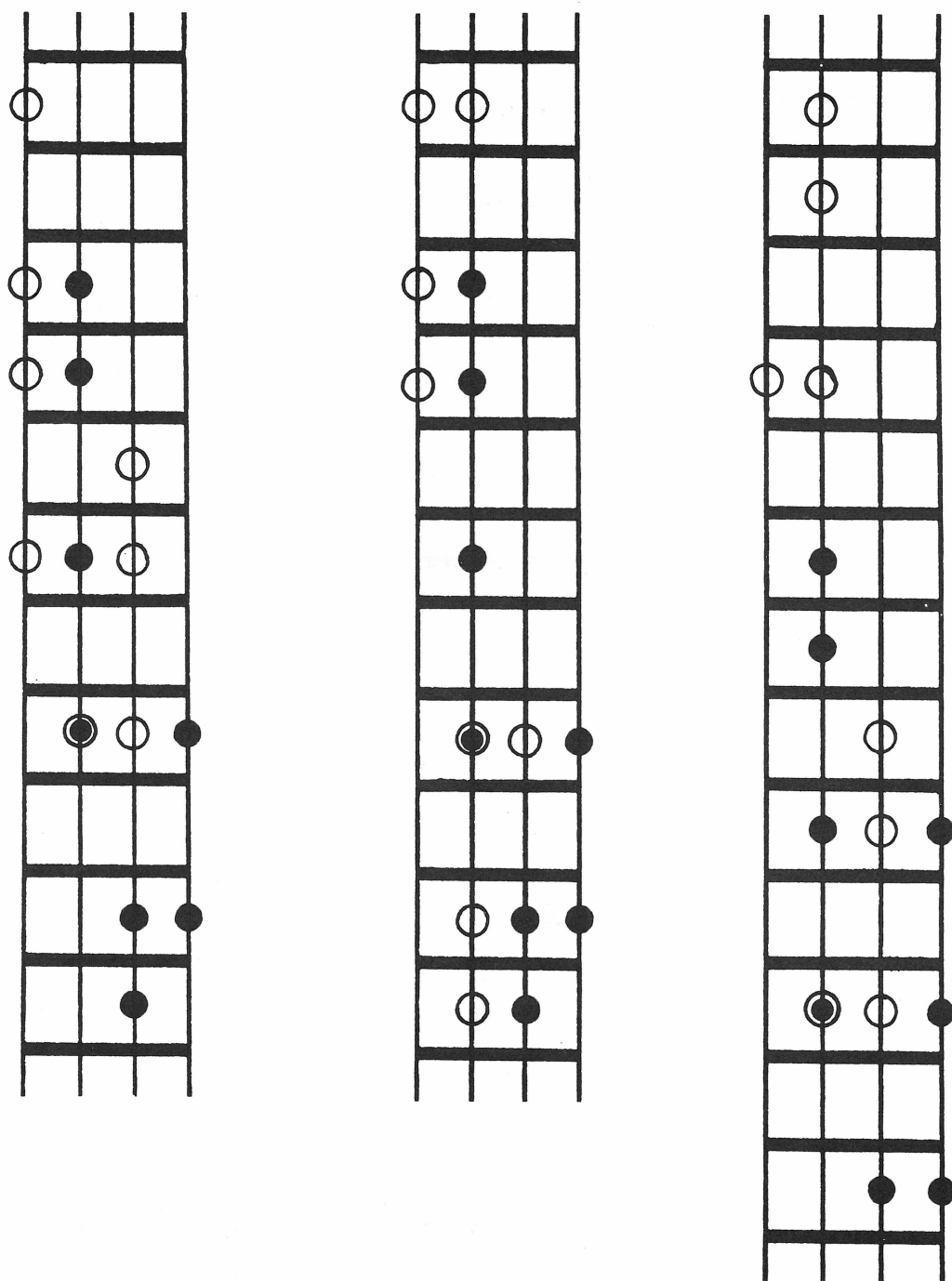


### EXERCISE:

*Extend several more three-string Aeolian patterns up an additional octave. Then apply this same process to three-string Dorian, Phrygian, Lydian, Mixolydian, and Locrian patterns.*



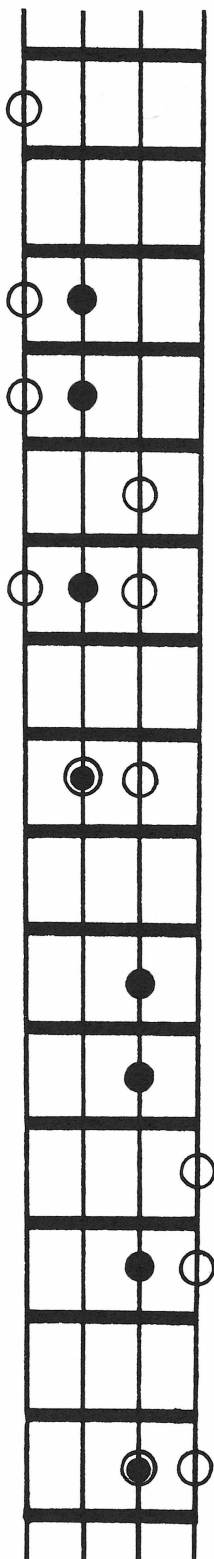
Any one-octave pattern on two strings can be extended to two octaves by conjoining its top note to any three-string pattern:



#### EXERCISE:

Conjoin several other three-string patterns to the lower octaves in the above examples. Then apply the same process to the Dorian, Phrygian, Lydian, Mixolydian, and Locrian modes.

When a two-octave scale occupies only three strings, further extensions can be made. In the example, the lower octave occupies the two bottom strings, and the upper octave occupies the two middle strings, leaving the top string available for several additional notes:

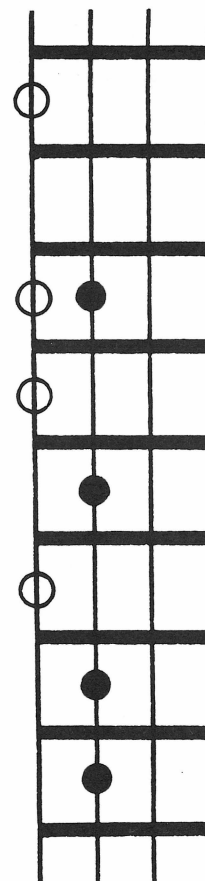
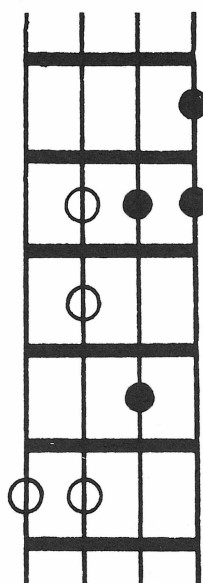
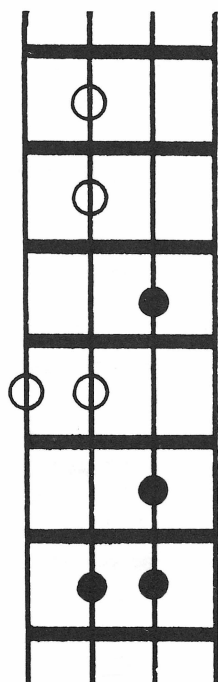
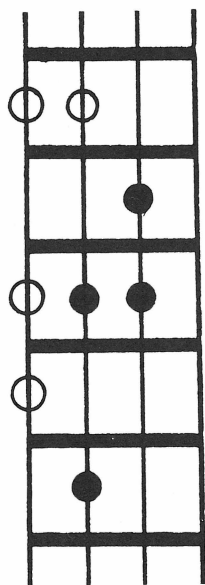
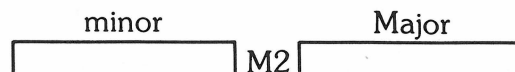


The process for finding one-octave and two-octave scales by varying their tetrachord patterns has now been amply illustrated. It should no longer be necessary to include as many examples for each scale as have heretofore been shown. From now on, the introduction of each new scale will therefore include only its bottom and top tetrachord types together with some sample fingerboard patterns. The reader can then visualize as many additional patterns as desired.

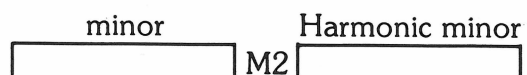
## MELODIC MINOR SCALE PATTERNS

Since the melodic minor scale in its descending form coincides with the Aeolian mode, it has already been illustrated.

The melodic minor in its ascending form, though, coincides with no mode and thus contains its own particular tetrachord structure—

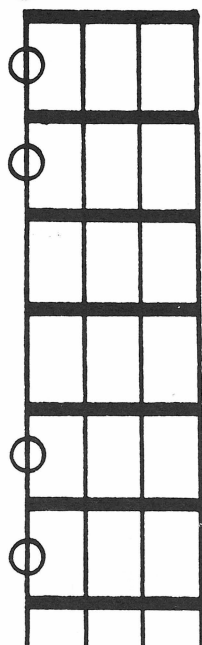


# HARMONIC MINOR SCALE PATTERNS:

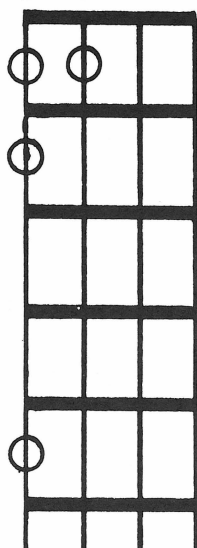


This scale uses a new tetrachord type, the harmonic minor, as its upper tetrachord:

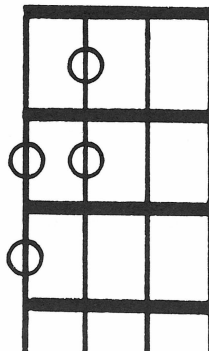
**S**



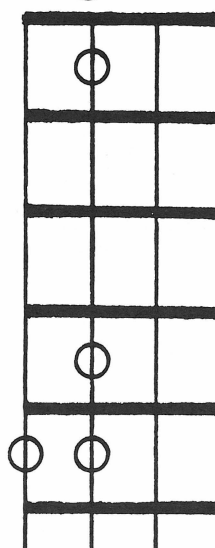
**3+1**



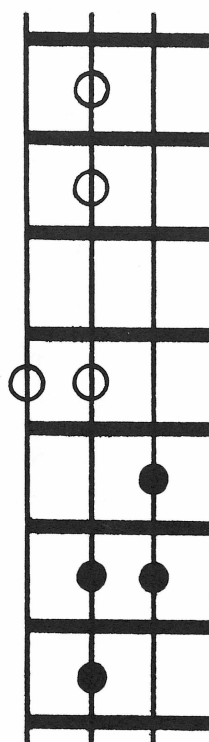
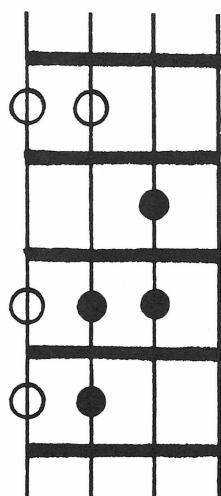
**2+2**

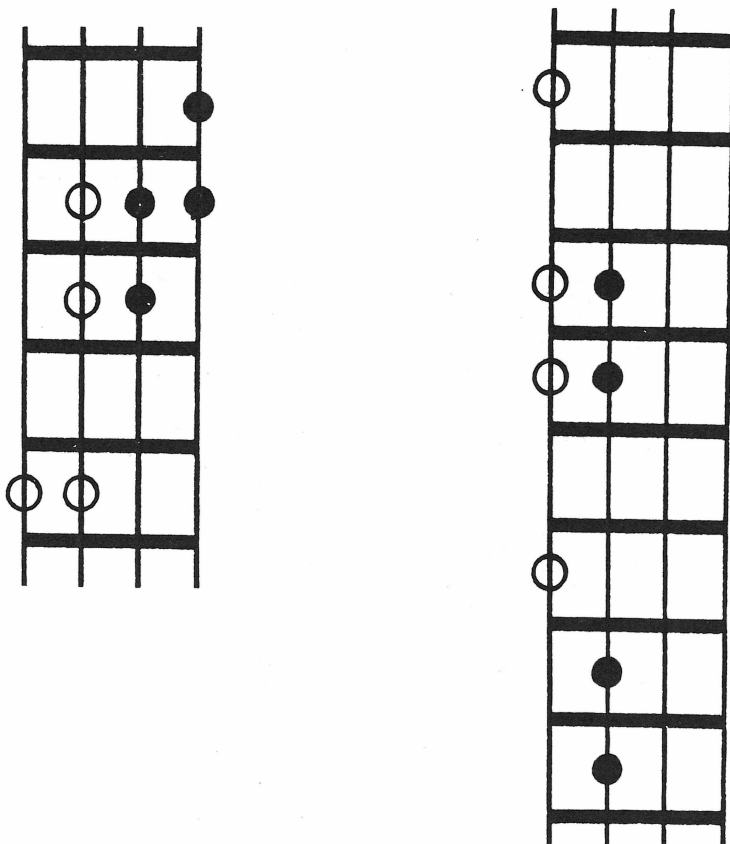


**1+3**



Of the four harmonic minor tetrachord patterns, the 2+2 is the most practical, since it avoids the left hand finger extensions the others require.

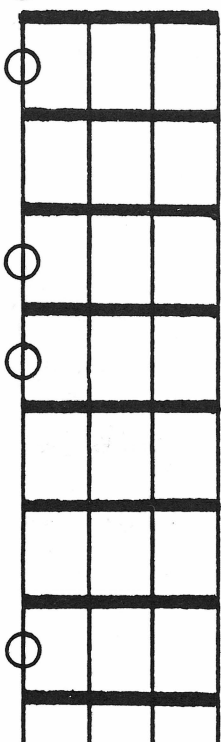




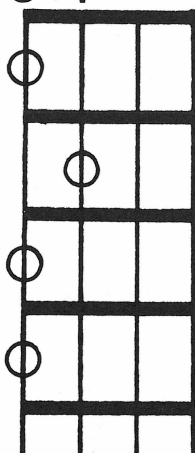
**HUNGARIAN MINOR SCALE PATTERNS:** Hungarian minor mi2 Harmonic minor

This scale uses another new tetrachord type, the Hungarian minor, as its bottom tetrachord:

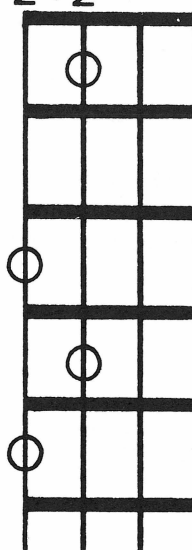
**S**



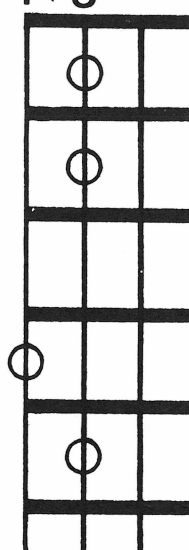
**3+1**



**2+2**

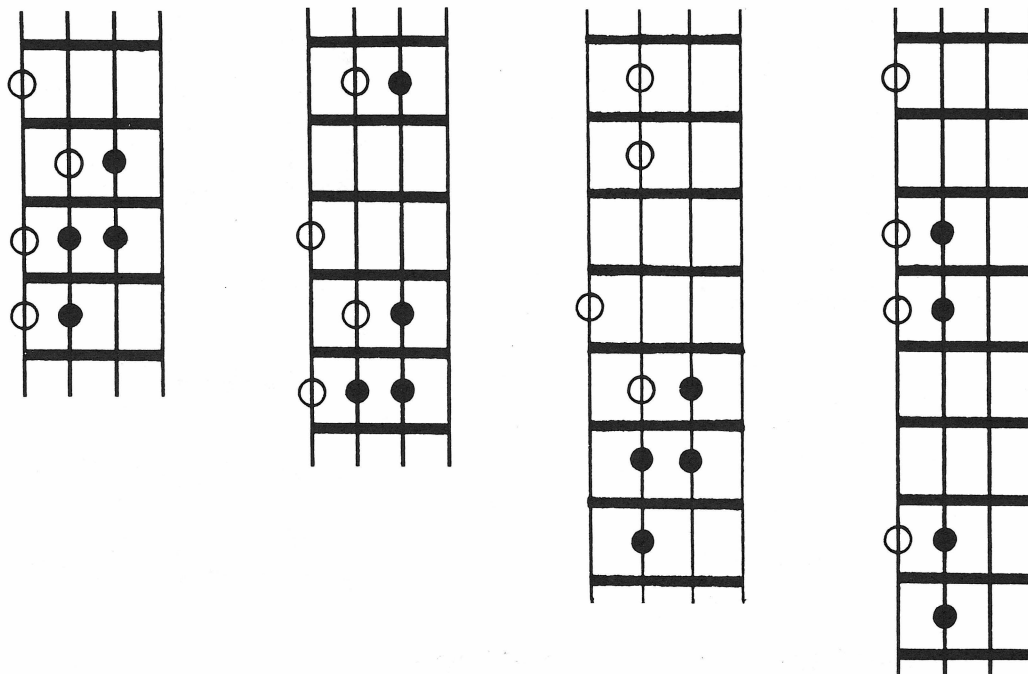


**1+3**



Of the four Hungarian minor tetrachord patterns, only the 3 + 1 avoids left hand finger extensions.

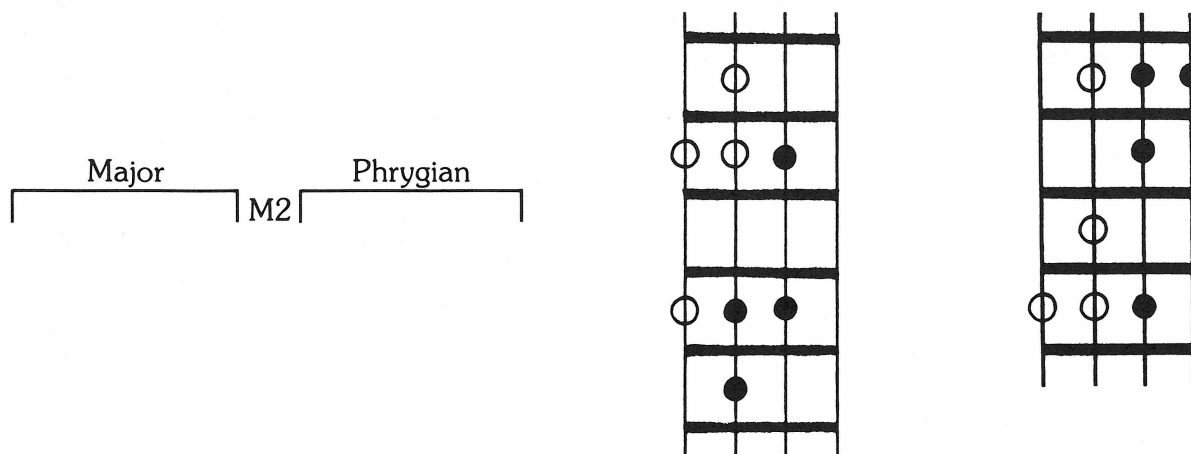
It may be advantageous to view the Hungarian minor scale as a harmonic minor scale with its fourth degree raised one fret, thus narrowing the interval between tetrachords from a whole step to a half-step:

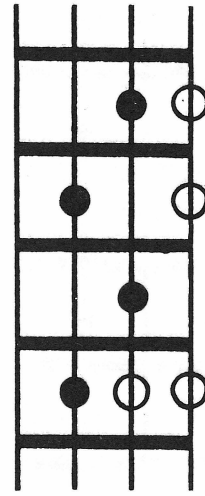


## NON-TRADITIONAL SEVEN-NOTE SCALES

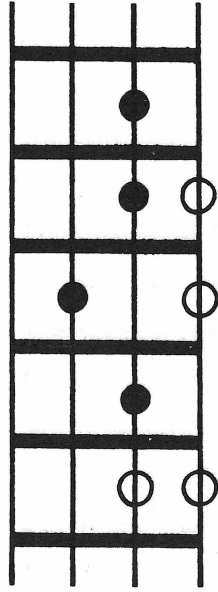
As has been shown, each traditional scale-type contains a particular arrangement of tetrachord-types and the interval which separates them. The traditional scales, though, represent comparatively few of the possible tetrachord combinations. No traditional scale, for example, combines a bottom Phrygian tetrachord with a top Major tetrachord, a bottom Major with a top Lydian, a bottom Lydian with a top Phrygian, and so on. Such non-traditional tetrachord combinations provide for the bassist many additional scales, some bland, some exotic, but each with its own flavor.

Here are one-octave samples of the non-traditional seven-note scales. Those found to be appealing can be explored and extended by the methods already shown for Major scales. In four of these scales, the bottom tetrachord is Major:



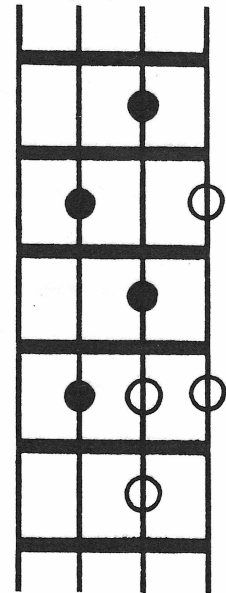


minor  
mi2  
Lydian

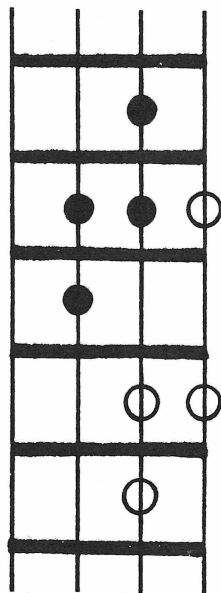


minor  
mi2  
Hung. mi

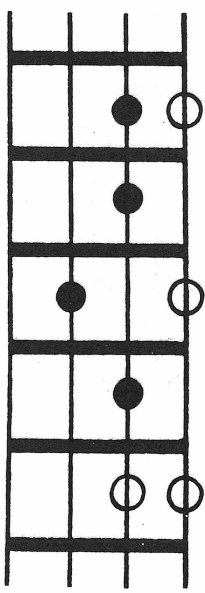
In two more, the bottom tetra chord is minor:



Major  
mi2  
Lydian



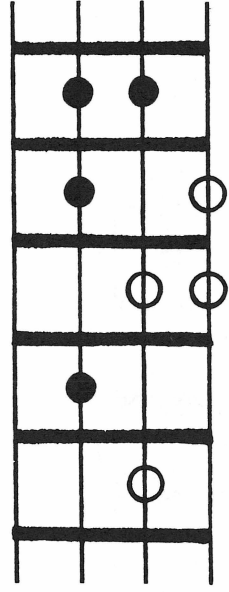
Major  
M2  
Harm. mi



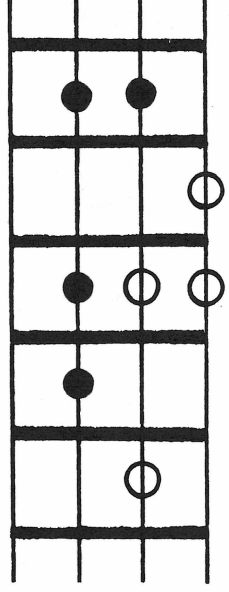
Major  
mi2  
Hung. mi

In four more, the bottom tetrachord is Phrygian:

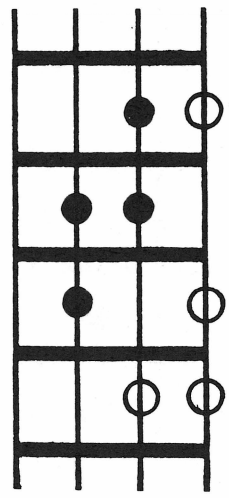
Phrygian M2 Major



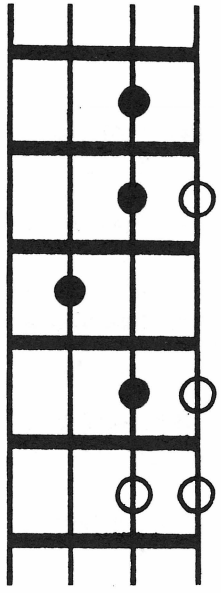
Phrygian M2 minor



Phrygian M2 Harm. mi



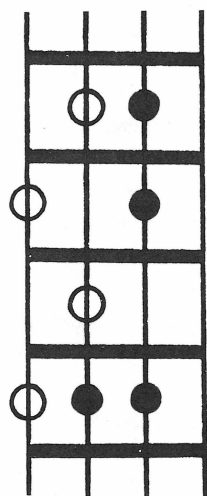
Phrygian m!2 Hung. mi



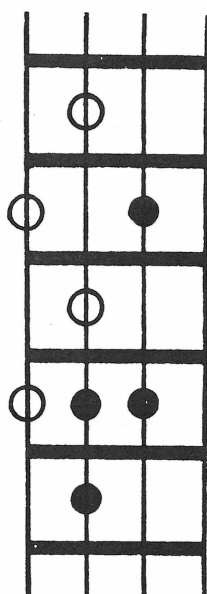


In three more scales, the bottom tetrachord is Lydian:

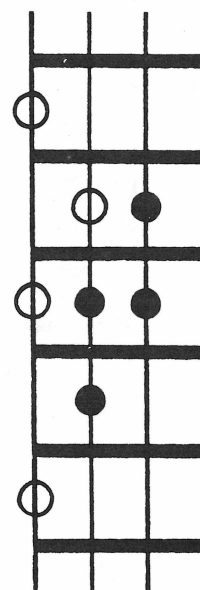
Lydian      minor  
┌─────────┐ ┌─────────┐  
│ mi2 │



Lydian      Phrygian  
┌─────────┐ ┌─────────┐  
│ mi2 │

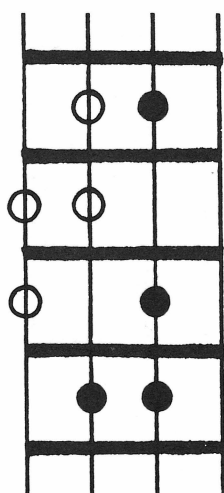


Lydian      Harm. mi  
┌─────────┐ ┌─────────┐  
│ mi2 │

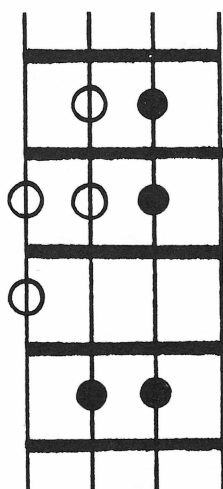


In six more, the bottom tetrachord is harmonic minor:

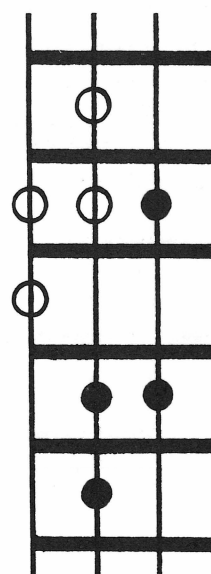
Harm. mi      Major  
┌─────────┐ ┌─────────┐  
│ M2 │



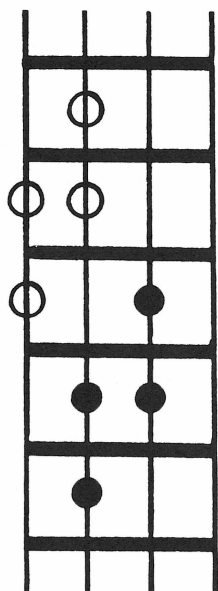
Harm. mi      minor  
┌─────────┐ ┌─────────┐  
│ M2 │



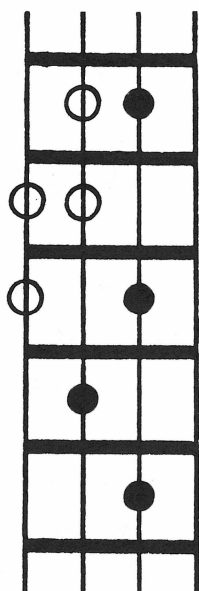
Harm. mi      Phrygian  
┌─────────┐ ┌─────────┐  
│ M2 │



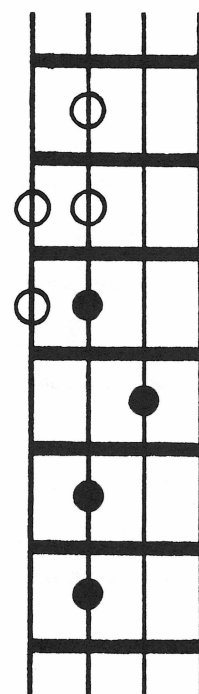
Harm. mi      Harm. mi  
┌────────┐ M2 ┌────────┐



Harm. mi      Lydian  
┌────────┐ mi2 ┌────────┐

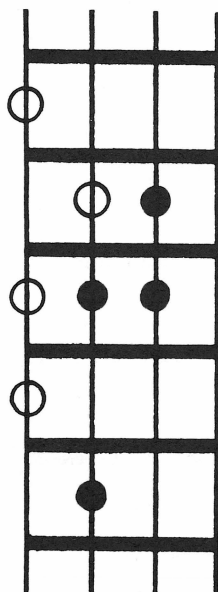


Harm. mi      Hung. mi  
┌────────┐ mi2 ┌────────┐

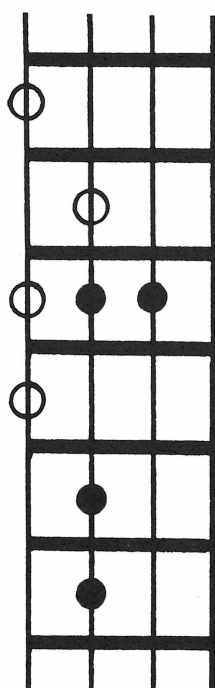


And in the last three, the bottom tetrachord is Hungarian minor:

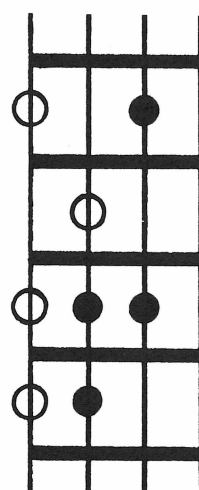
Hung. mi      Major  
┌────────┐ mi2 ┌────────┐



Hung. mi      minor  
┌────────┐ mi2 ┌────────┐

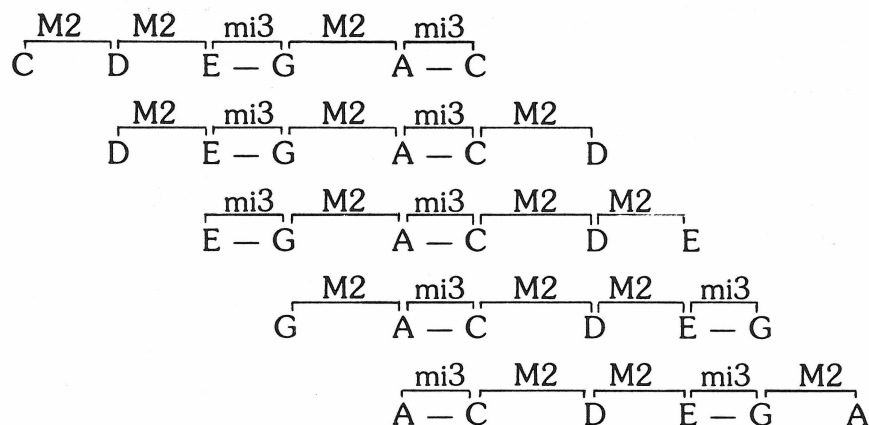


Hung. mi      Phrygian  
┌────────┐ mi2 ┌────────┐



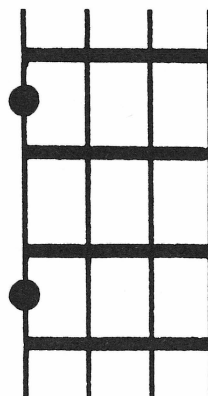
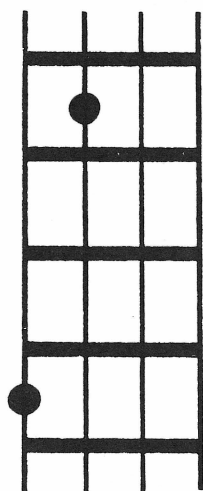
## PENTATONIC SCALE PATTERNS

Removing two notes from any seven-note scale leaves a group of five notes, one of the many Pentatonic scales. The most commonly used of these Pentatonic scales removes the fourth and seventh notes from the Major scale, leaving a mixture of Major second and minor third intervals:

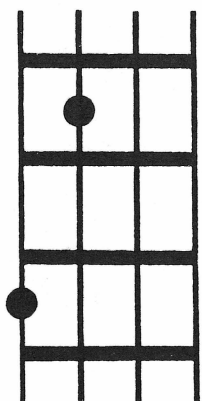


On the fingerboard, Major seconds invariably appear as:

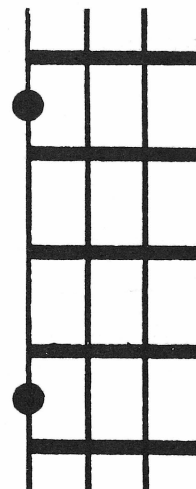
or as:



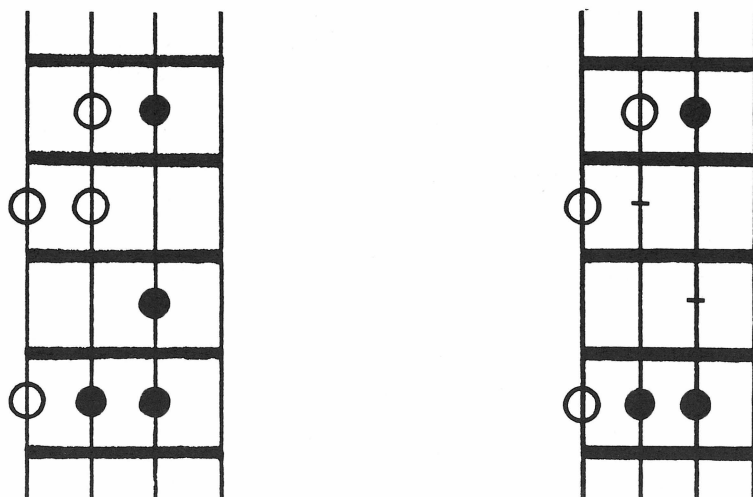
And minor thirds appear as:



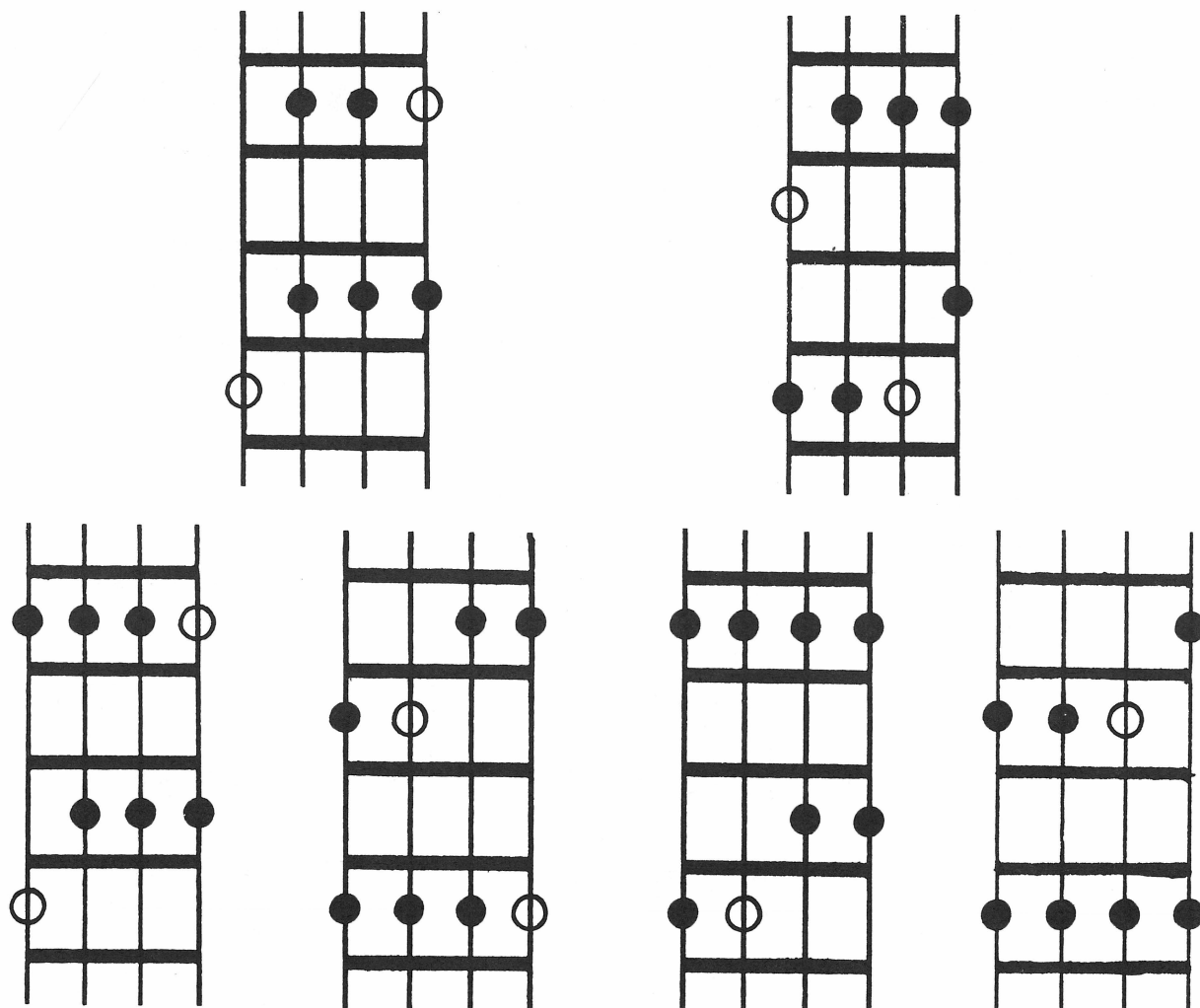
or as:



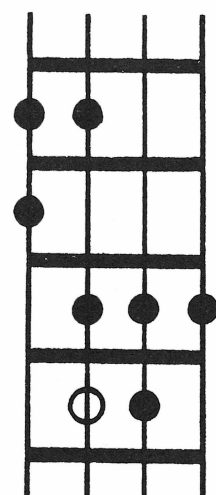
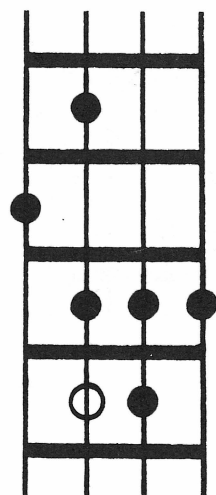
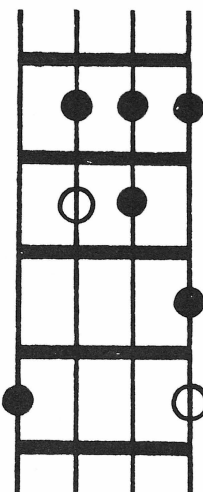
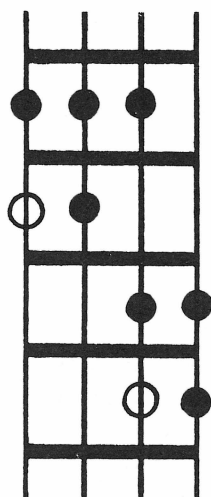
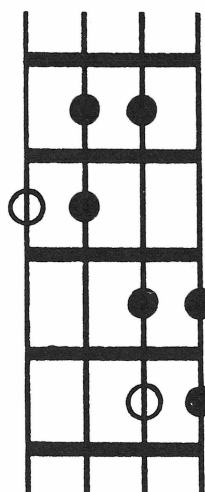
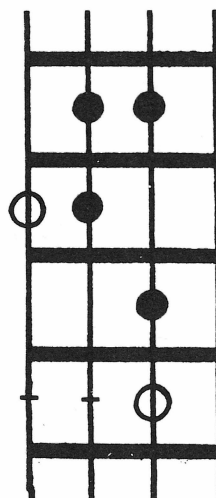
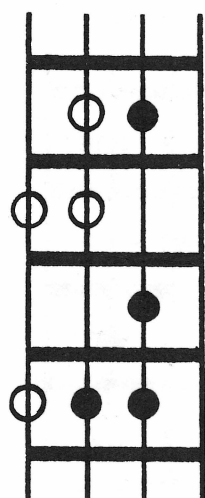
Here is a one-octave Major scale followed by the Pentatonic derived by removing scale notes four and seven:



Each note in a given Pentatonic scale can lie at the bottom of a fingerboard pattern, as illustrated by the following five extended versions of the above I, II, III, V, VI note-group. Circles will show the tonic notes of the parent Major scales, while solid dots will show the remaining notes:



Obviously, note-pairs other than the fourth and seventh can be removed from the Major scale to leave Pentatonic scales. And each such group of five notes can form patterns over any note within it. Here, for example, are the fingerboard patterns for an oriental-sounding Pentatonic scale which deletes the second and fifth notes of the same Major scale as was shown on the preceding page:



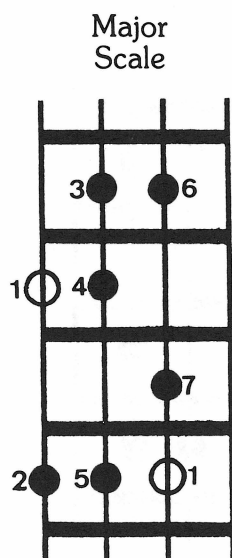
There are twenty-one different Pentatonic note-groups in any seven-note scale. These can be found by:

1.) Removing adjacent scale notes:

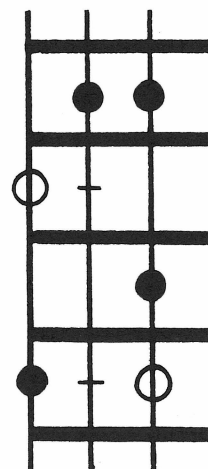
Scale notes: 1 2 3 4 5 6 7

Omitted notes  
in C Major:

— E F G A B  
C — F G A B  
C D — G A B  
C D E — A B  
C D E F — B  
C D E F G —



Notes 4 & 5  
Removed



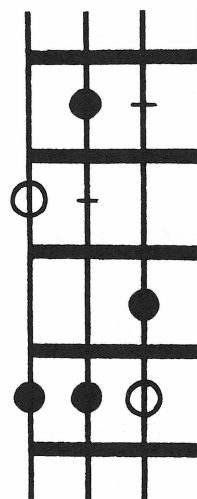
EXERCISE:

Find fingerboard patterns for the other five omitted note-pairs.

2.) Removing scale notes a third apart:

— D — F G A B  
C — E — G A B  
C D — F — A B  
C D E — G — B  
C D E F — A —

Notes 4 & 6  
Removed



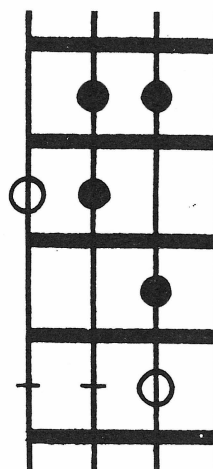
EXERCISE:

Find fingerboard patterns for the other four omitted note-pairs.

### 3.) Removing scale notes a fourth apart:

—D E—G A B  
C—E F—A B  
C D—F G—B  
C D E—G A—

Notes 2 & 5  
Removed



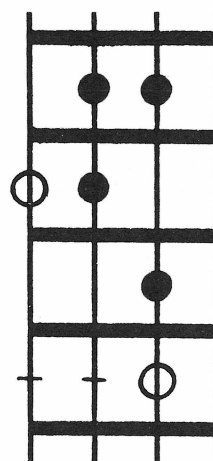
#### EXERCISE:

Find fingerboard patterns for the other three omitted note-pairs.

### 4.) Removing scale notes a fifth apart:

—D E F—A B  
C—E F G—B  
C D—F G A—

Notes 2 & 6  
Removed



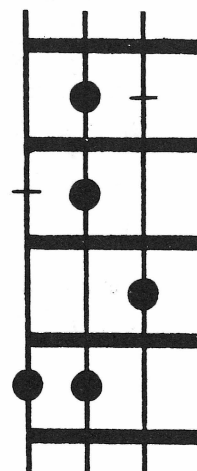
#### EXERCISE:

Find fingerboard patterns for the other two omitted note-pairs.

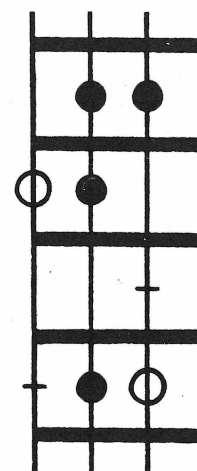
### 5.) Removing scale notes a sixth apart:

—D E F G—B  
C—E F G A—

Notes 1 & 6  
Removed



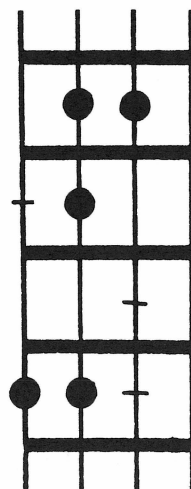
Notes 2 & 7  
Removed



6.) Removing scale notes a seventh apart:

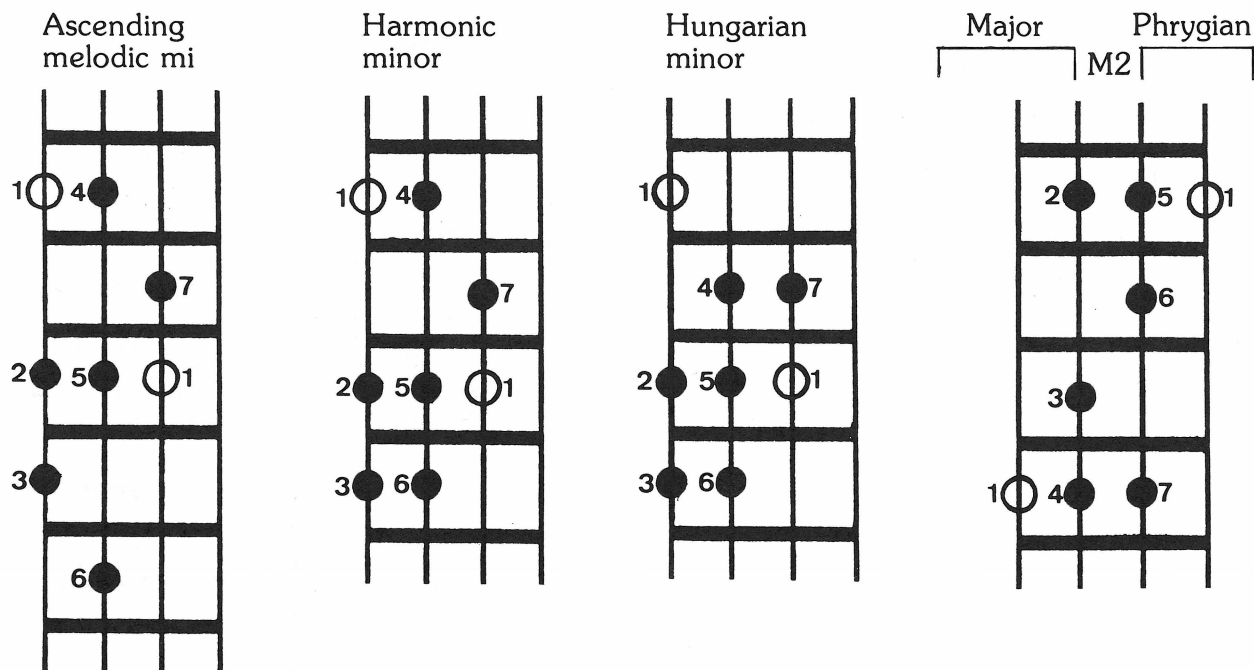
— D E F G A —

Notes 1 & 7  
Removed



Because the Modes are seven-note segments of the extended Major scale, their inherent Pentatonic scales will duplicate those already derived from the Major scale. The remaining seven-note scales, though, contain many additional Pentatonic patterns. These will be found by applying the entire above process in turn to the ascending melodic minor, the harmonic minor, the Hungarian minor, then to the series of non-traditional seven-note scales in the order of their appearance in the previous chapter.

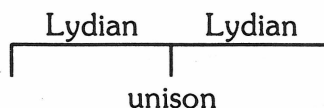
For convenience, here are sample one-octave patterns of the first four scale-types to be processed:





# SIX-NOTE SCALES

## WHOLE TONE SCALE PATTERNS:

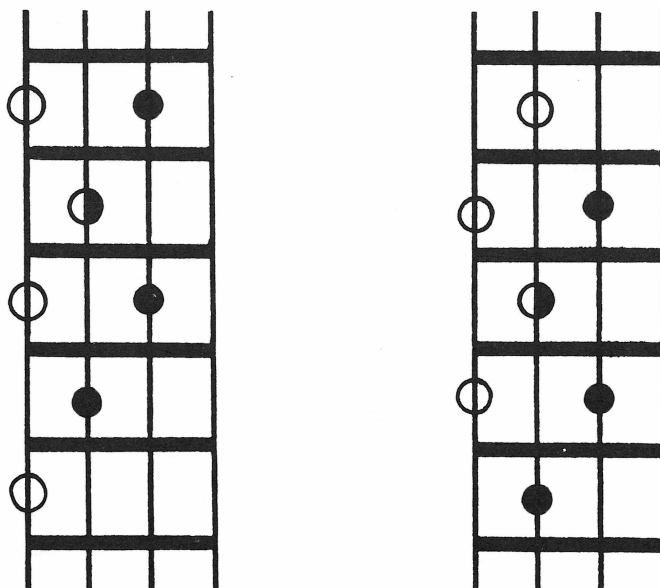


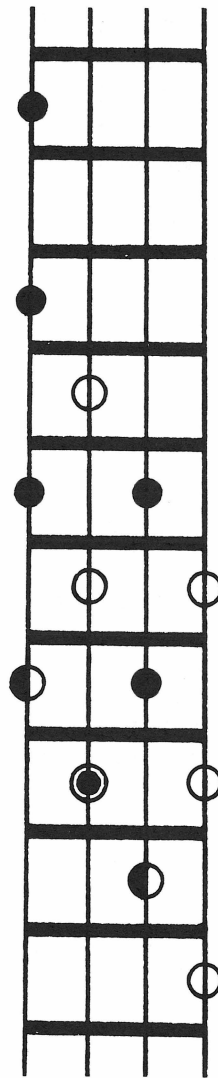
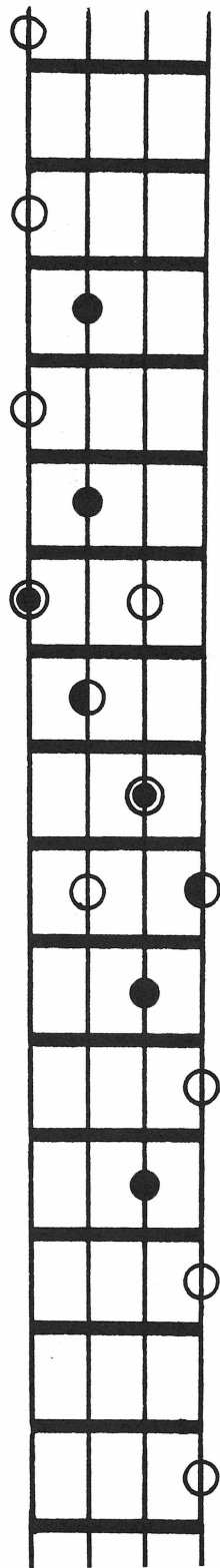
In this scale, the top note of the lower tetrachord is also the bottom note of the upper tetrachord. Since the Lydian tetrachord contains three consecutive whole steps, two conjoined Lydian tetrachords contain six consecutive whole steps, thus dividing the octave into six equal parts. The individual notes of this scale combine into slanting

lines across the fingerboard ( \ and / ), making it the easiest of all scales to

visualize. In the examples, ◐ shows where the tetrachords conjoin, while ● continues to show where the octave repetitions conjoin:

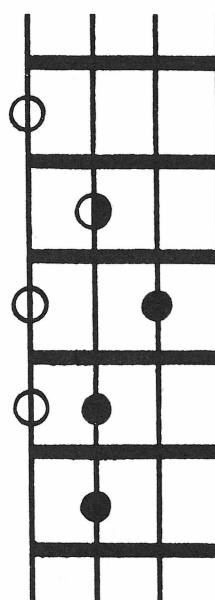
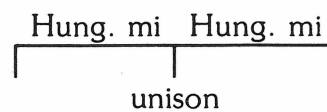
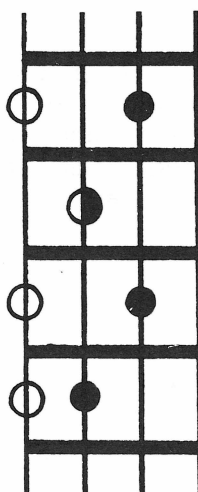
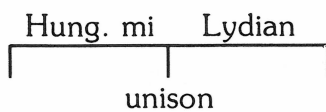
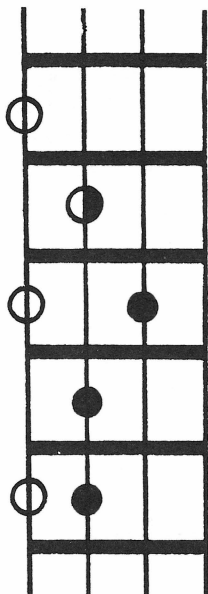
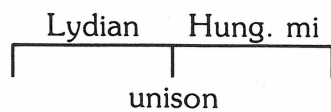
## ONE OCTAVE





EXTENSIONS

As in the whole tone scale, any two tetrachords which each span an augmented fourth can conjoin to produce a six-note scale:



### EXERCISE:

*Extend each of the above six-note scales another octave.*

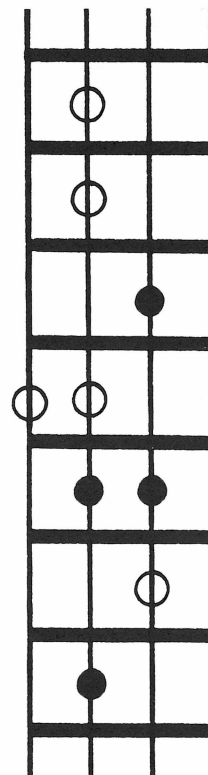
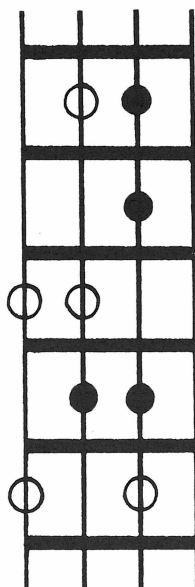
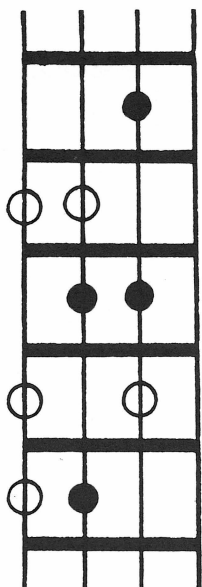
# EIGHT-NOTE SCALES

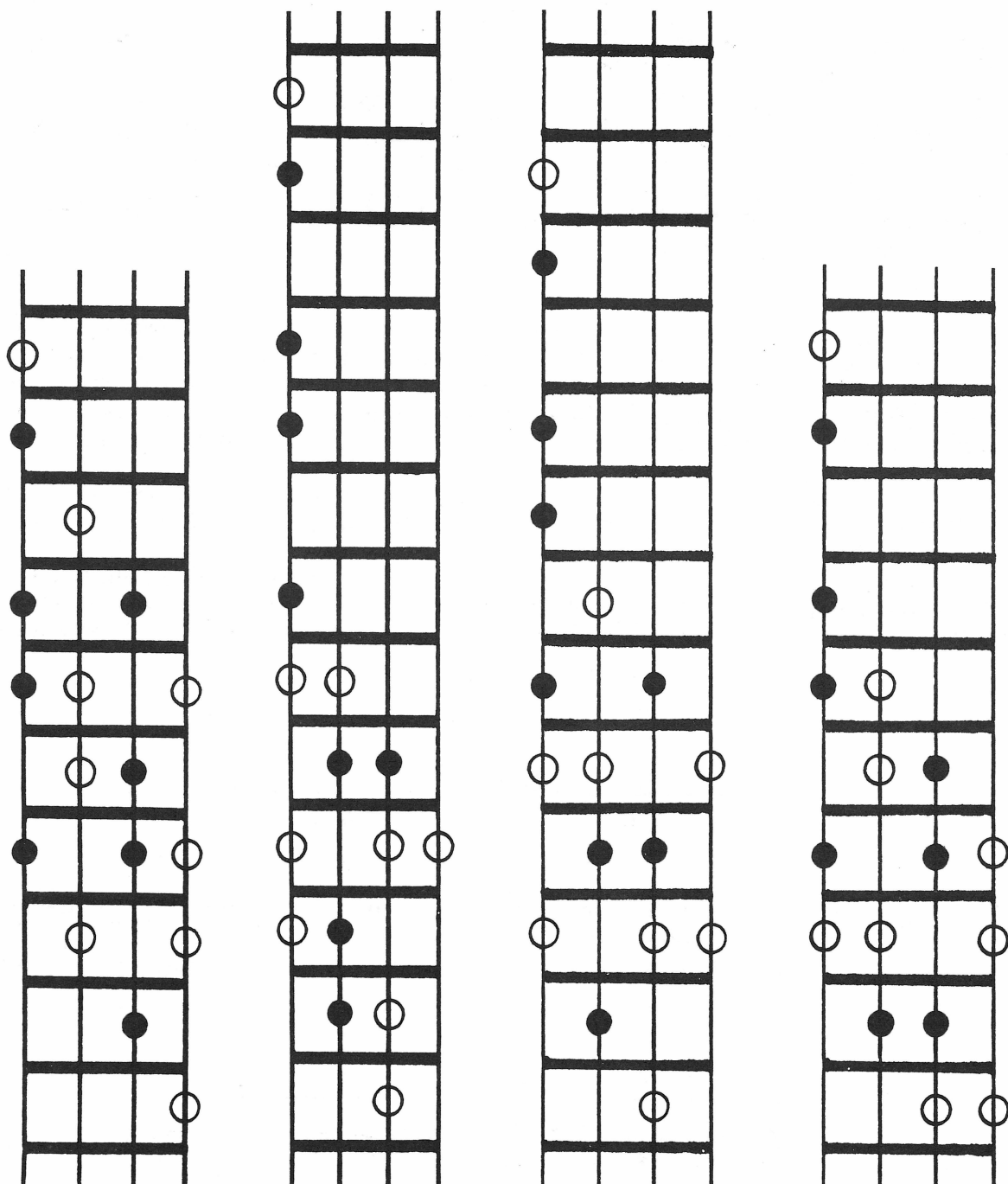
**DIMINISHED SCALE PATTERNS:**



Since the minor tetrachord contains a whole step, a half-step, then again a whole step, two minor tetrachords a half-step apart set up a succession of alternating whole and half-steps, which continue to and beyond the octave repetition of the tonic note. As the examples will show, tetrachords never conjoin in the diminished scale, nor do they ever lie a whole step apart. Instead, they always lie a half-step apart:

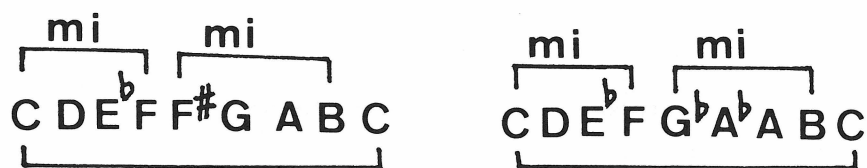
**ONE OCTAVE**





EXTENSIONS

Traditional scales contain seven notes, one for each different letter of the musical alphabet, before they reach the octave repetition of their tonic note. But the diminished contains eight notes before it reaches that octave repetition. One letter must therefore be repeated as a chromatic alteration of itself, F and F<sup>#</sup> or A and A<sup>b</sup>, for example:



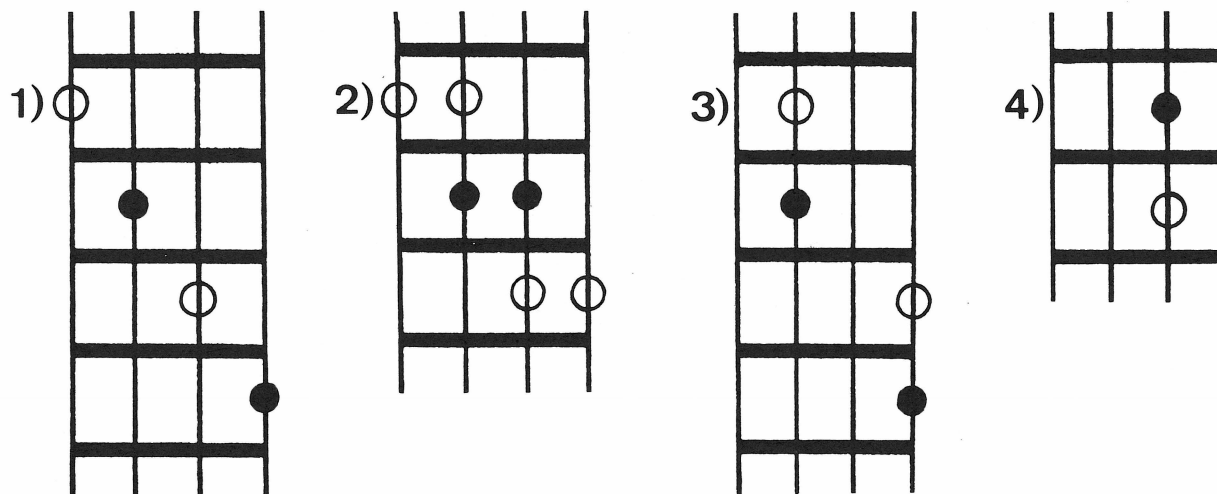
Including the diminished, there are sixteen such eight-note scales. Like the diminished scale, the remaining fifteen consist of two tetrachords separated by half-step and each spanning a Perfect fourth between its bottom and top notes:



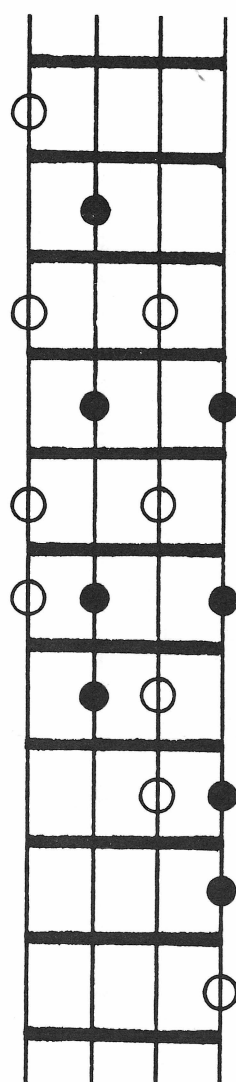
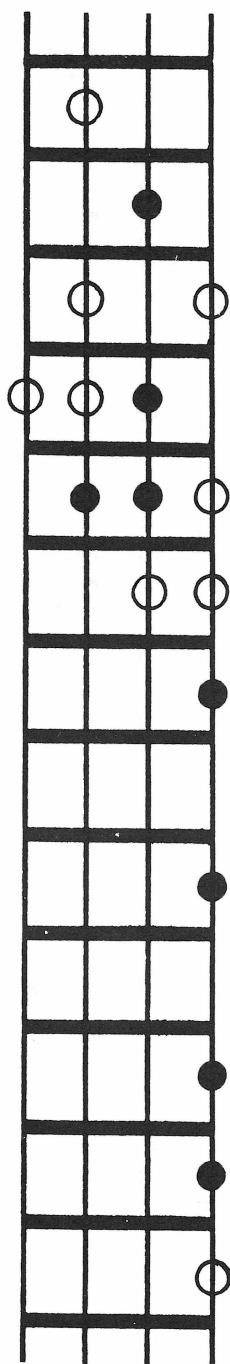
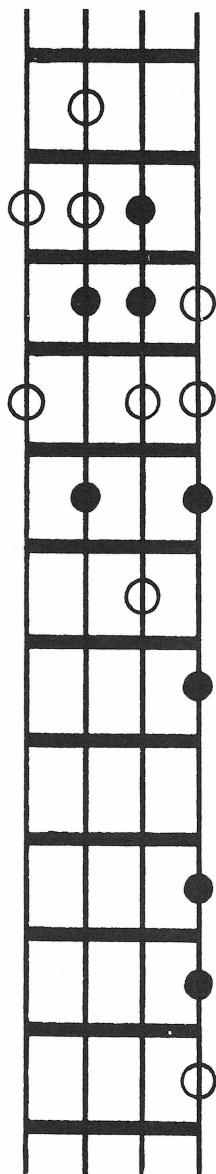
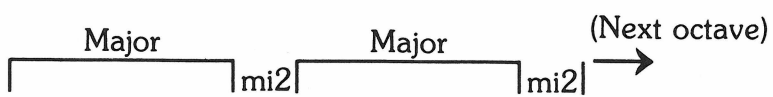
All the examples of these scales will encompass two full octaves. In them, each circle a half-step above a dot will show an octave repetition of the tonic note, as the above extensions of the diminished scale illustrate.

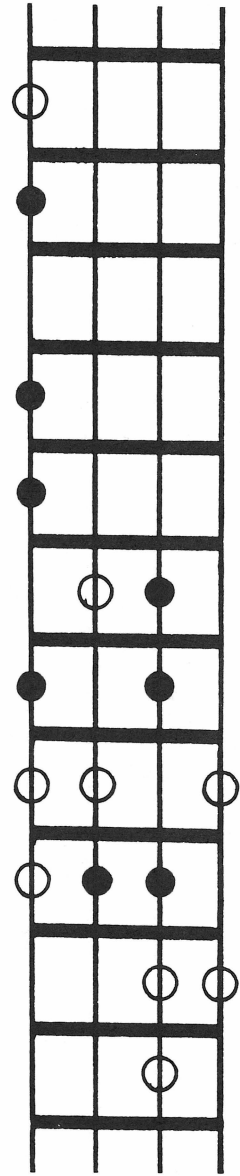
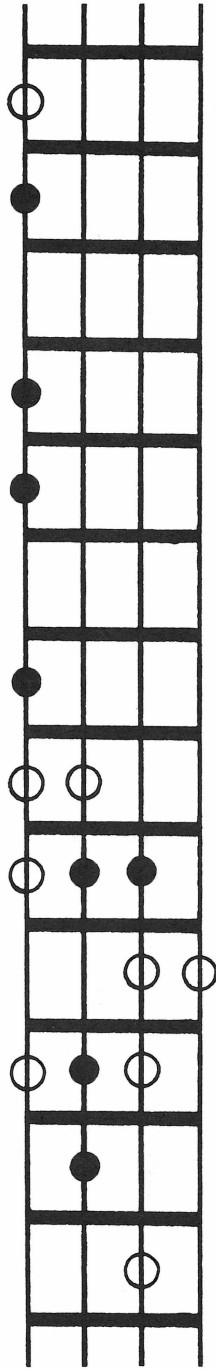
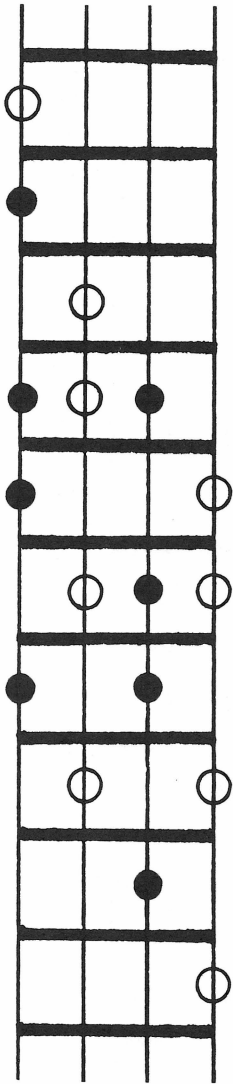
Some internal patterns occur often enough throughout all sixteen eight-note scale-types to make them valuable as visual aids.

Starting on the bottom note of a pattern, 1) shows the successive bottom notes of consecutive tetrachords, and 2) shows both the bottom and the top notes of consecutive tetrachords. A dot directly above a circle, 3), shows the half-step connection between upper and lower tetrachords within each octave, and a circle directly above a dot, 4), shows the half-step connection between upper and lower octaves.



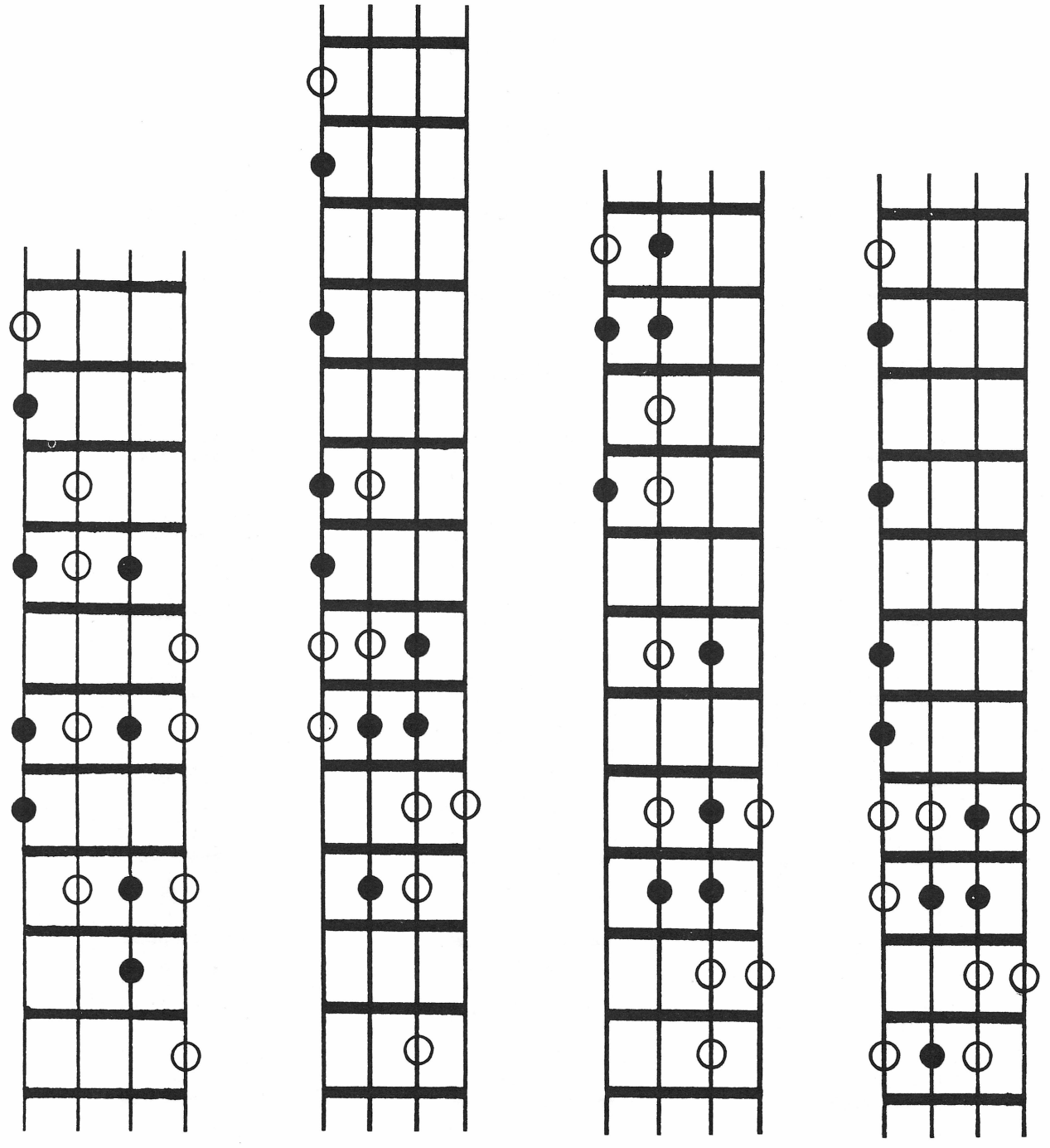
In four of these eight-note structures, the bottom tetrachord is Major:



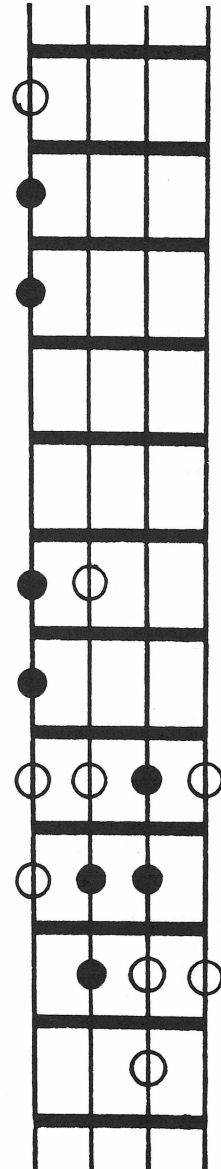
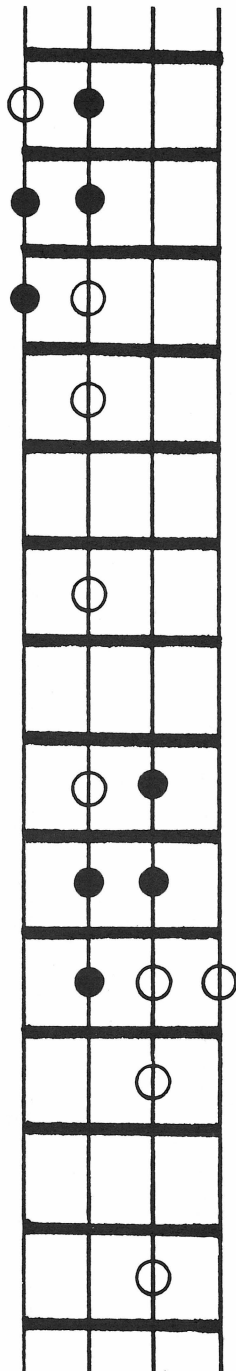
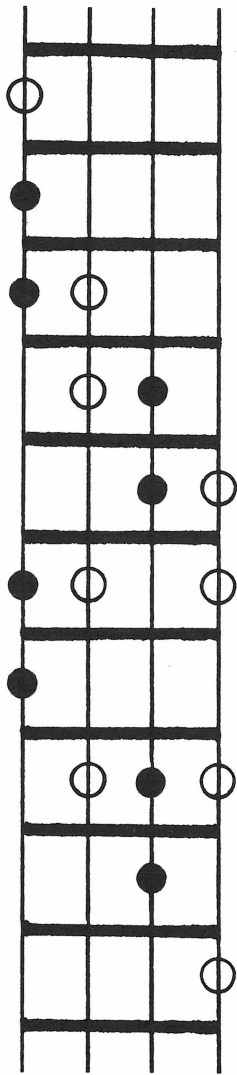


Major  
mi2  
minor  
mi2  
←

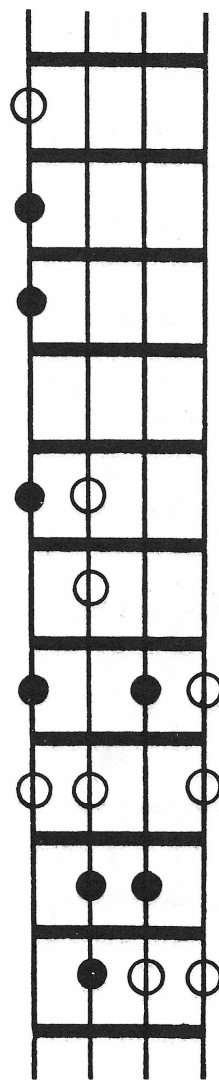
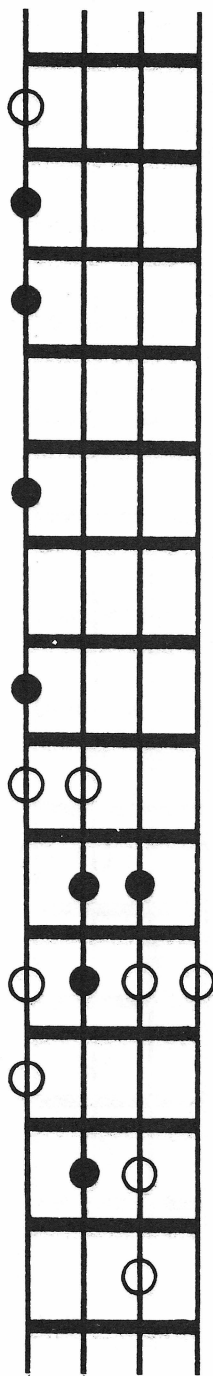
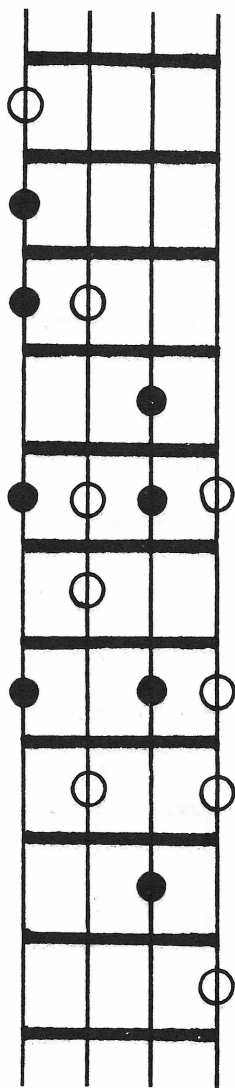




Major  
mi2  
Phrygian  
mi2  
←

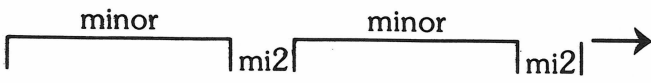


Major  
mi2  
Harm. mi  
mi2

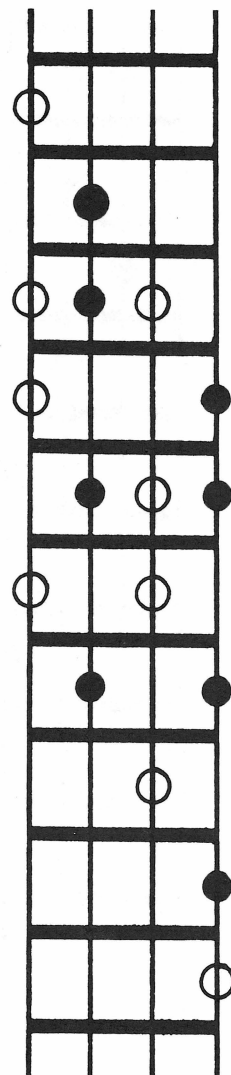
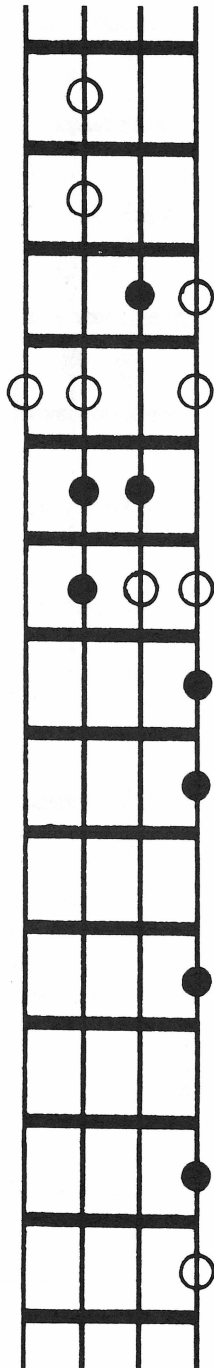
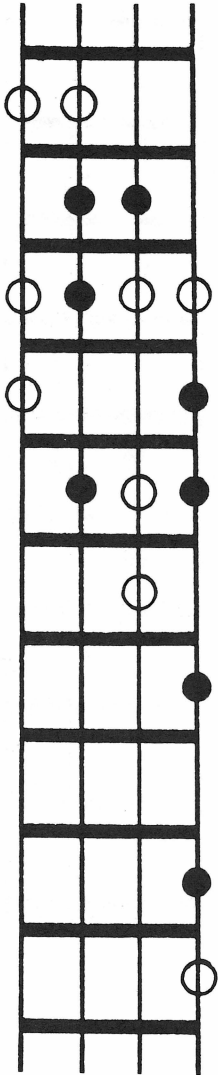
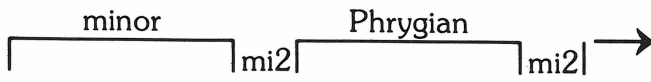


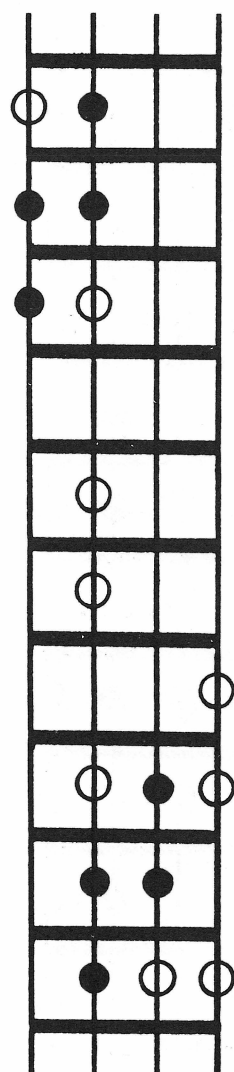
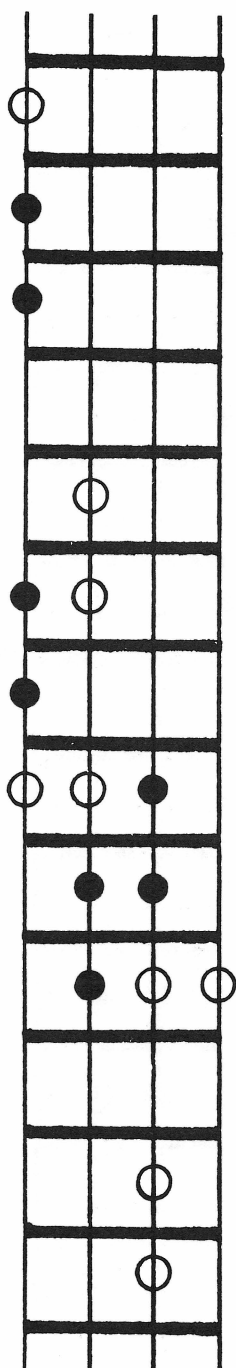
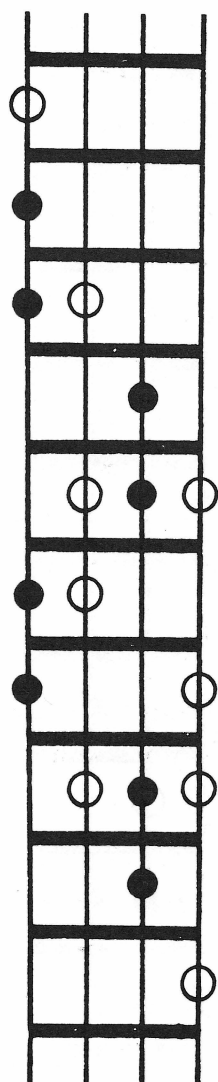
minor  
mi2  
Major  
mi2

In the next four, the bottom tetrachord is minor:

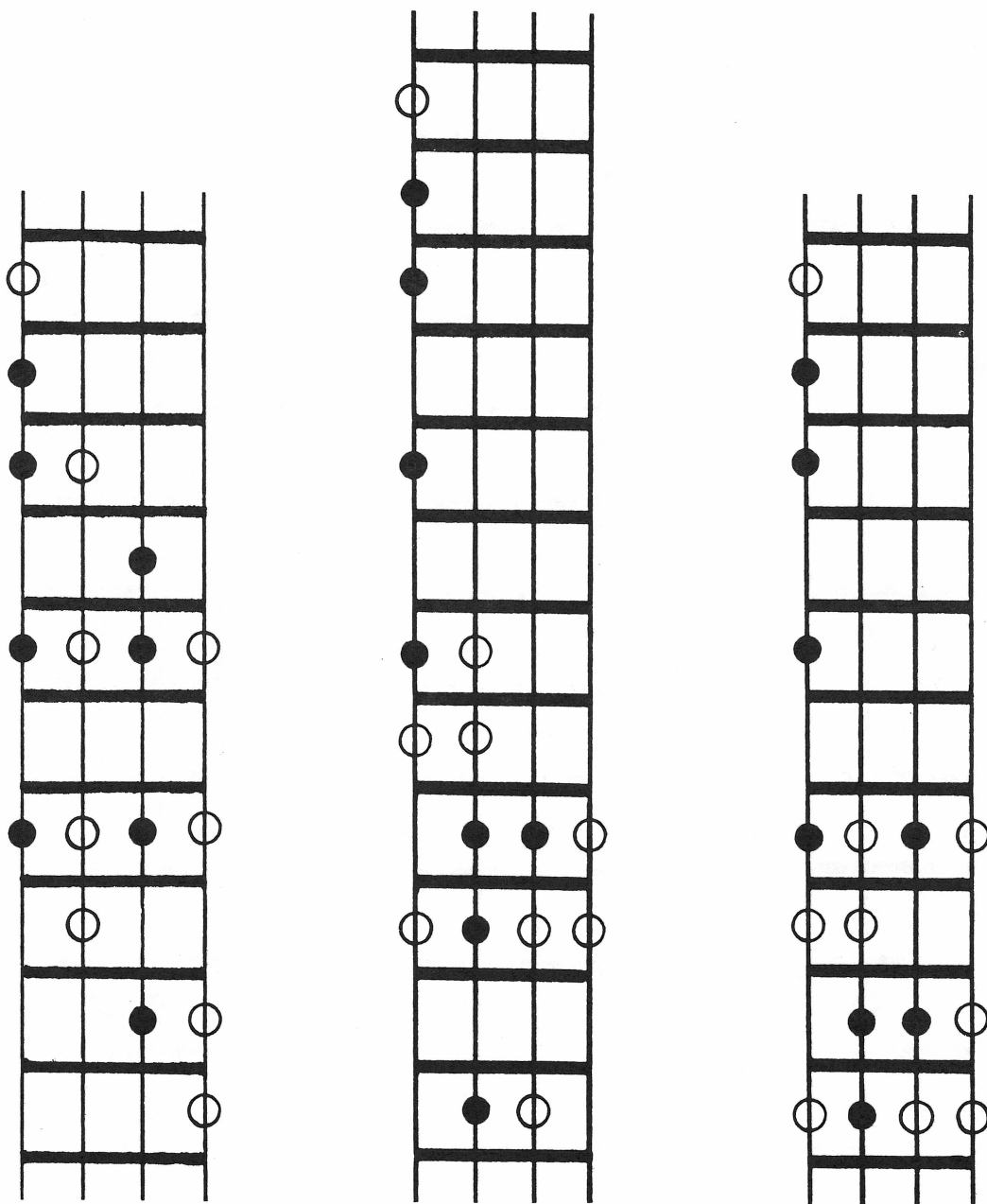
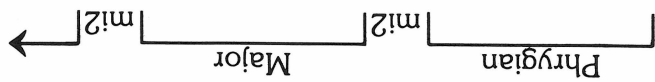


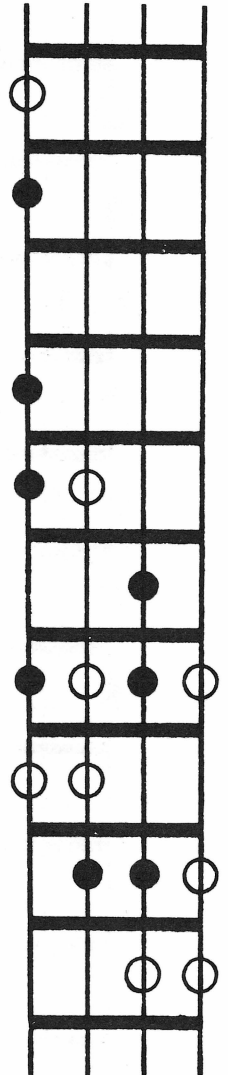
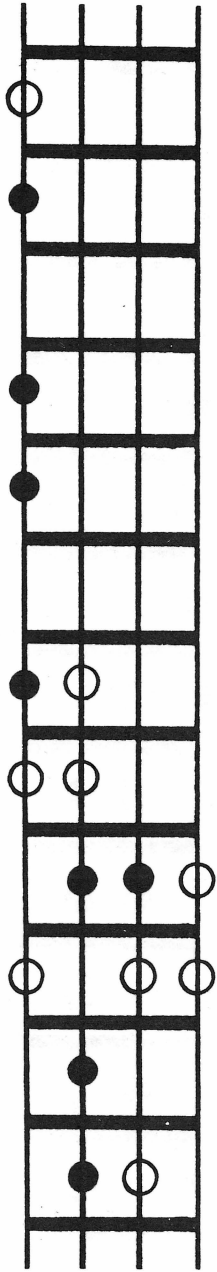
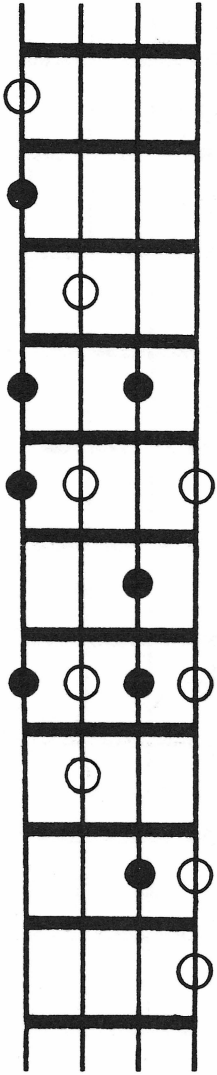
(This structure is the diminished scale, already illustrated.)



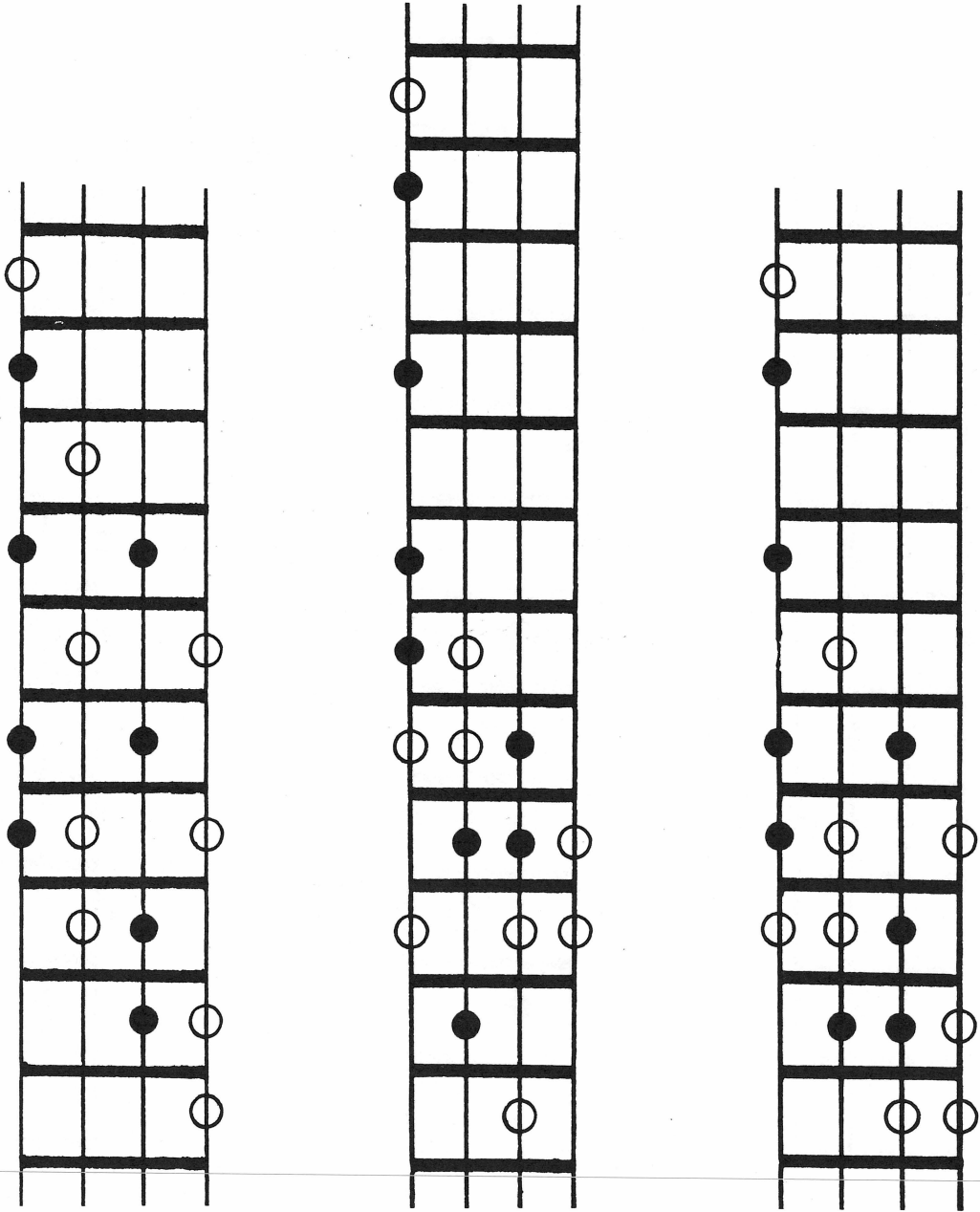


In another four, the bottom tetrachord is Phrygian:



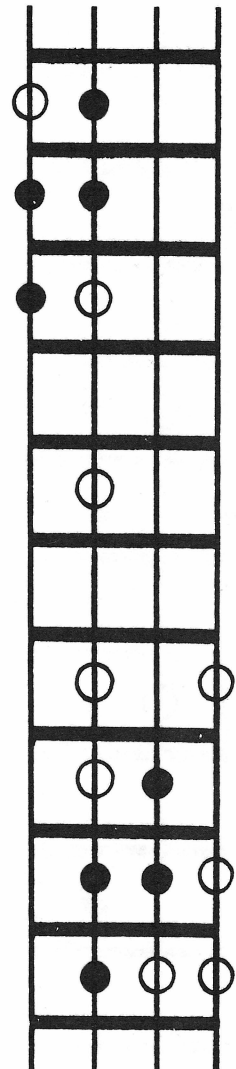
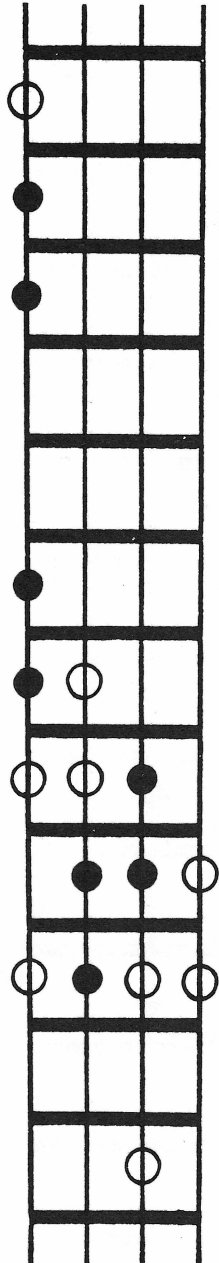
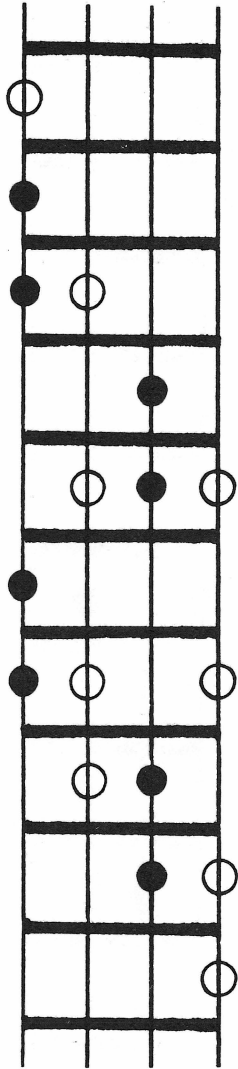


Phrygian  
mi2  
minor  
mi2  
←



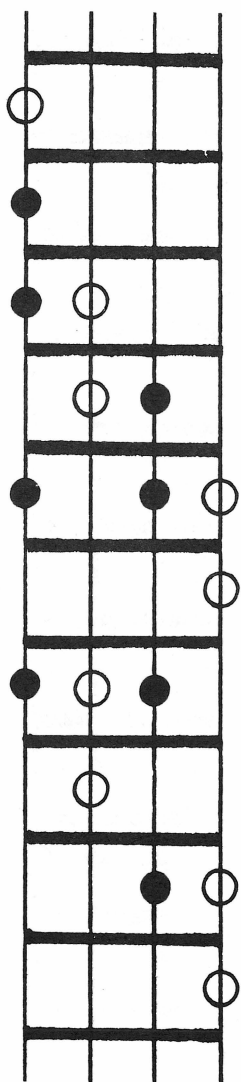
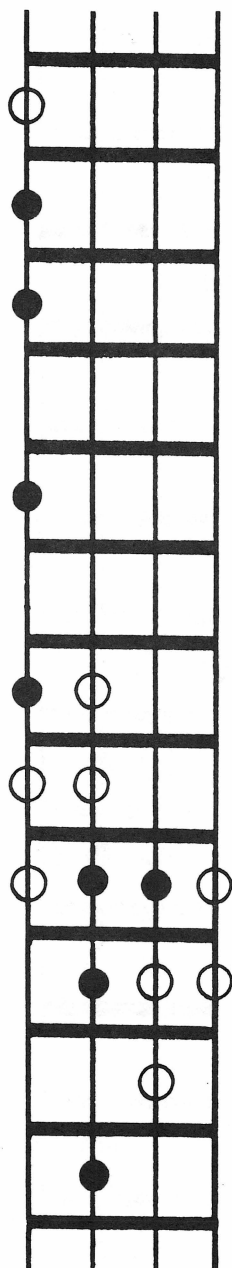
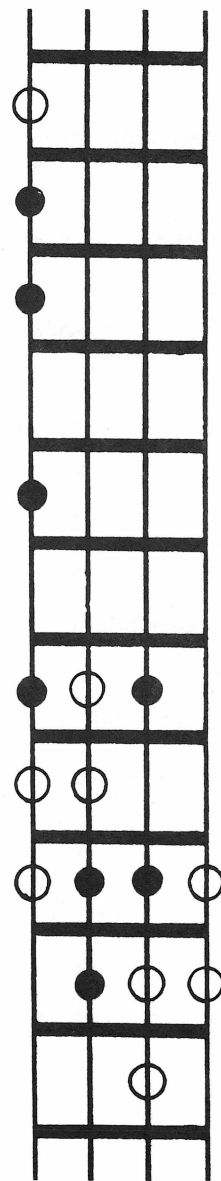
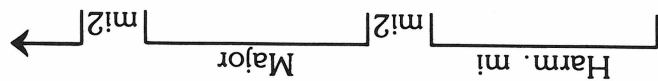
Phrygian  
mi2  
Phrygian  
mi2  
←

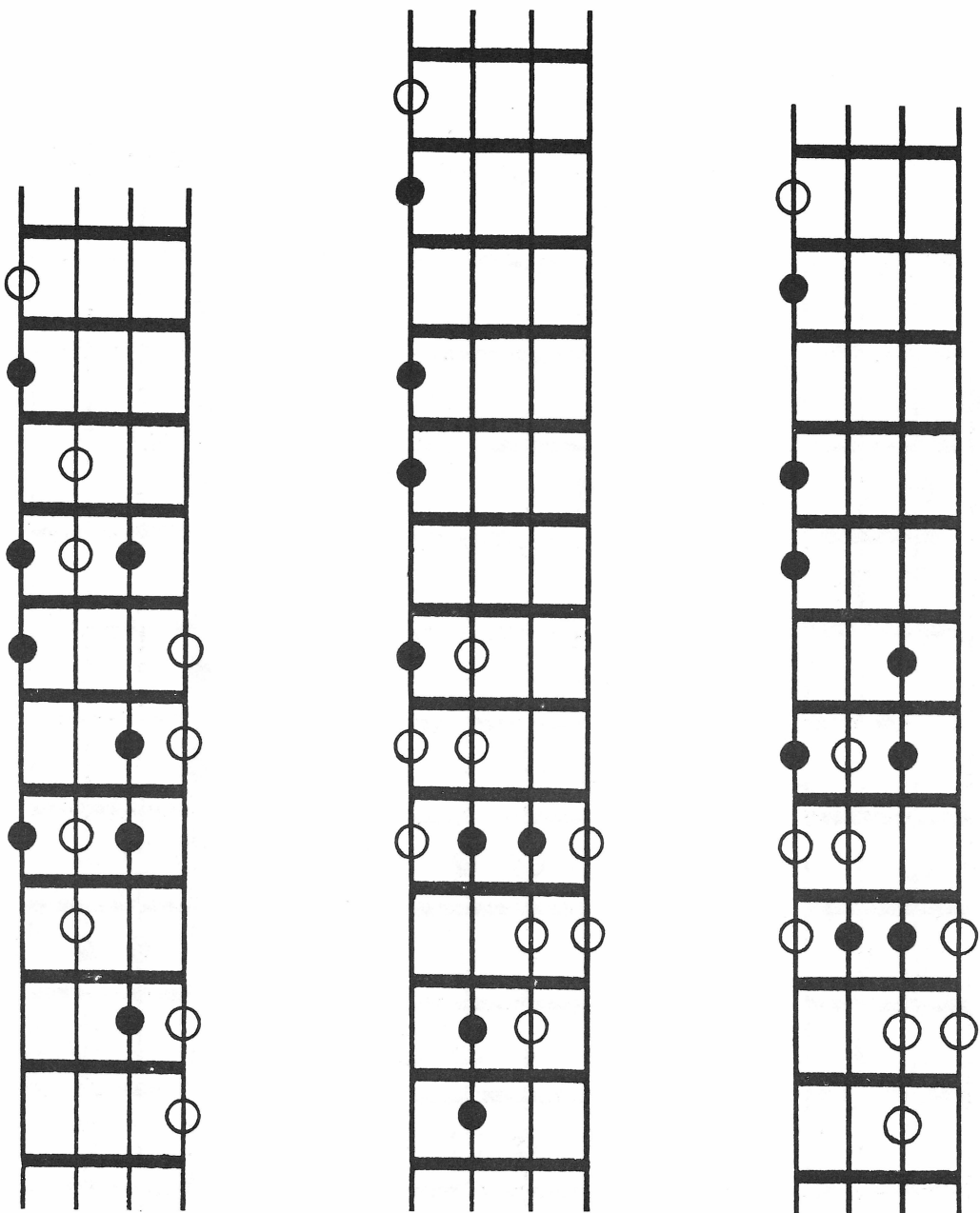
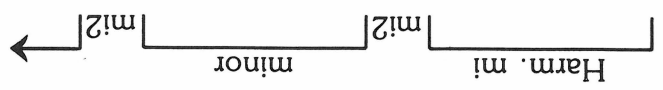




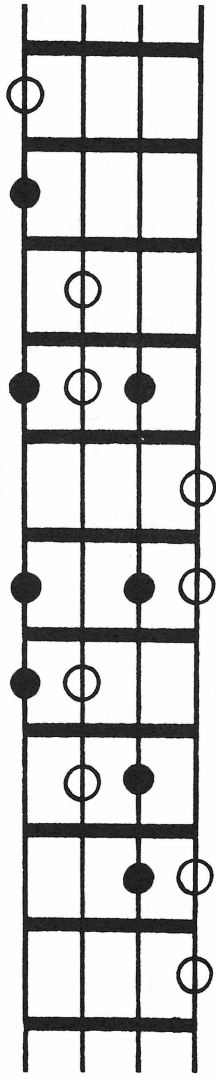
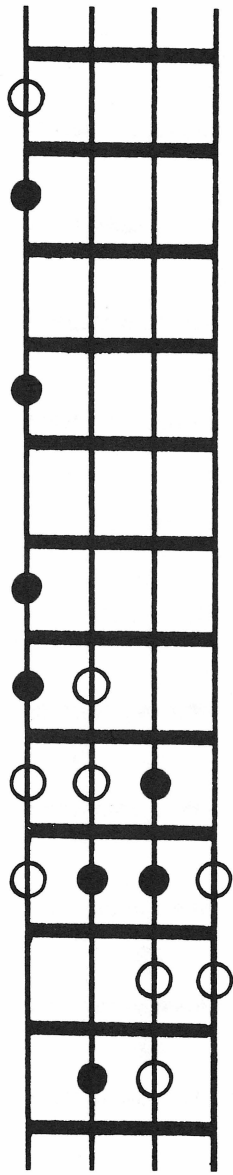
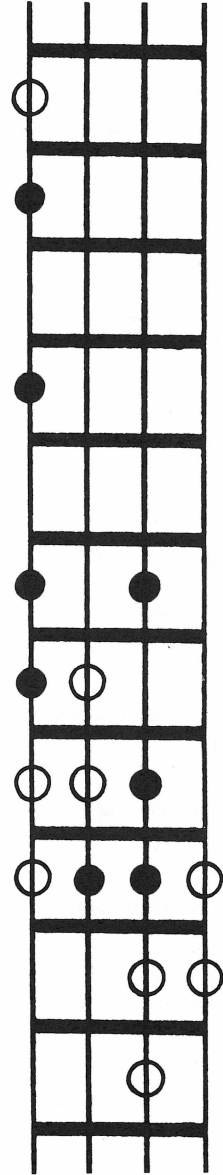
Phrygian | mi2 | Harm. mi | mi2 | ←

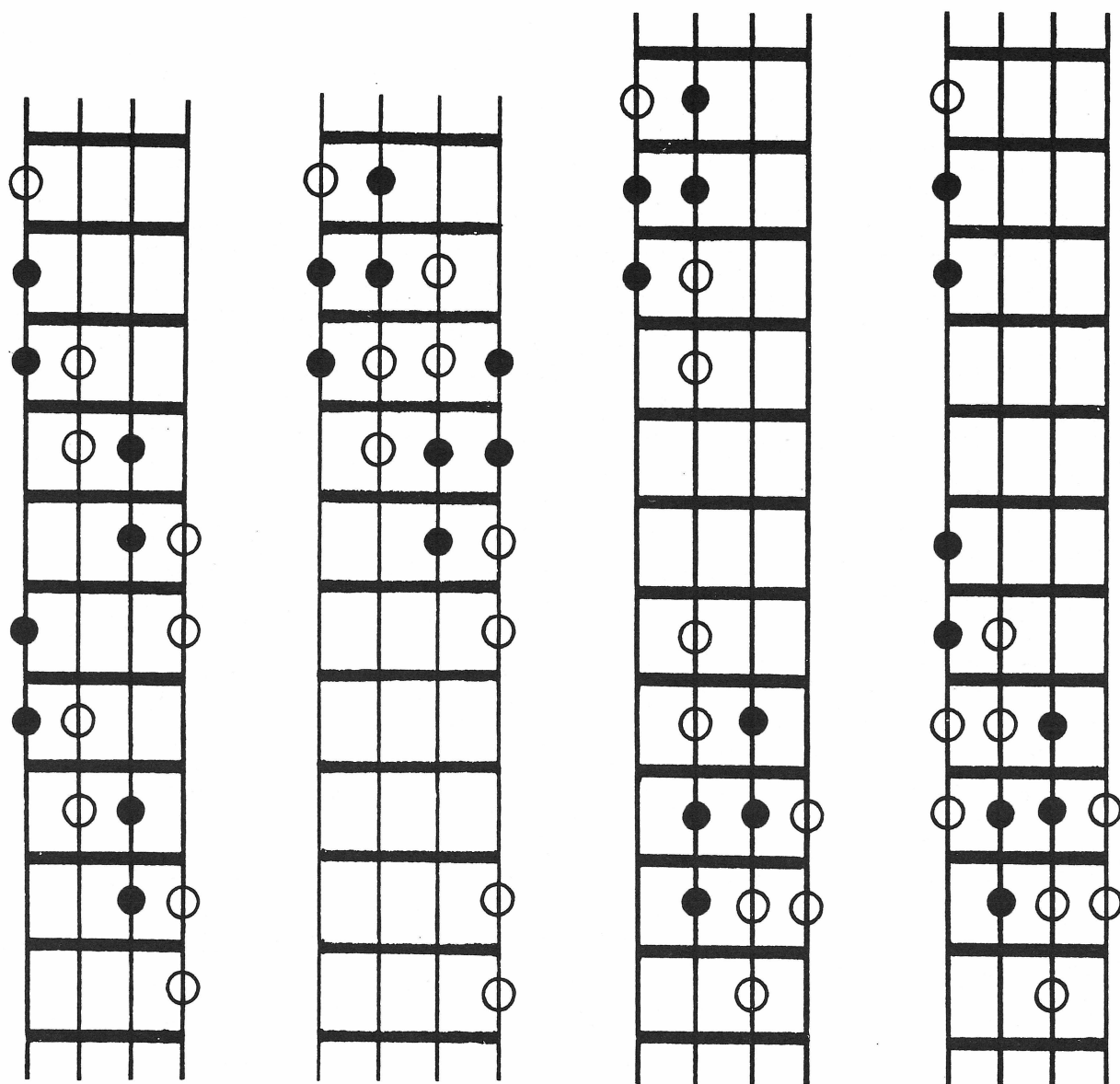
In the remaining four, the bottom tetrachord is Harmonic minor:





Harm. mi | mi2 | Phrygian | mi2 | ←





Harm. mi  
Harm. mi  
mi2  
mi2





Other publications by Dr. William L. Fowler:

*TONAL SHORTHAND* (\$2.50)

*GUITAR PATTERNS FOR IMPROVISATION* (\$4.00)

Both available from **down beat**, Department BKS,  
222 W. Adams Street, IL 60606

*FINGERBOARD FORMS FOR BASS* (\$5.95) Mel Bay

Publications, Pacific, MO 63069. Available in retail outlets.

*TAKE ANOTHER LOOK AT THE KEYBOARD* (\$15.00)

Available at retail outlets or from Fowler Music Enterprises,  
808 So. Alkire St., Lakewood, CO 80228